WESTERN STATES EDITION

DOMESTIC ENGINEERING

Whole No. 737 Chicago and New York, Saturday, January 26, 1907 Vol. XXXVIII. No. 4. $1.00 a Year

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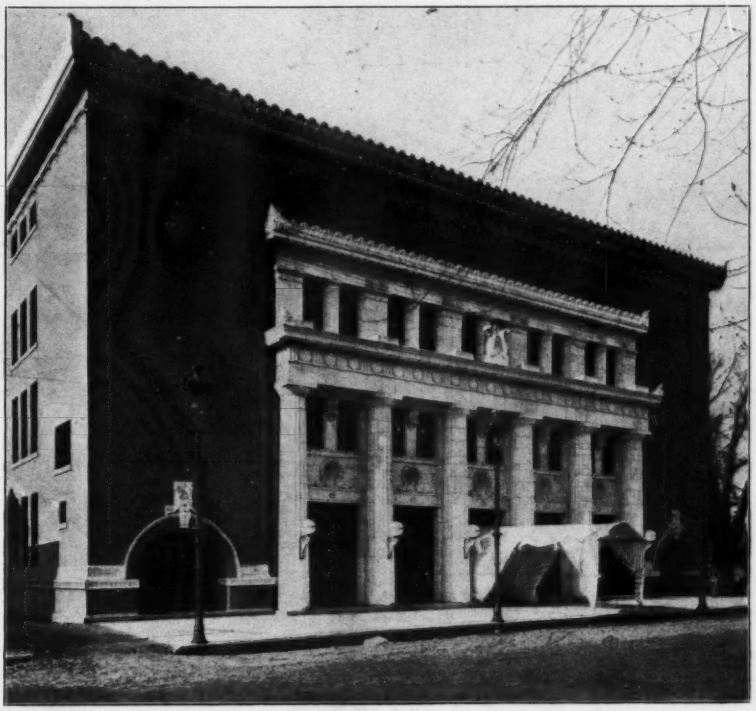


THE NEW AUDITORIUM AND OFFICE BUILDING, MINNEAPOLIS, MINN. A handsome specimen of modern American architecture, warmed by 9,222 square feet of AMERICAN Radiation. H. Kelly & Co., Heating Contractors; Bertrand & Chamberlain, Architects.

AMERICAN RADIATOR COMPANY

General Offices, 282-284 Michigan Avenue, Chicago.

See Page 97 for Addresses of Sales Branches.

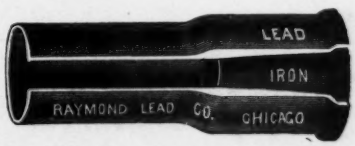
THOUSANDS OF PLUMBERS FIND

United Brass Goods

MOST TO THEIR LIKING

You would too if you knew how good UNITED goods are

UNITED BRASS MFG. CO., Cleveland, Ohio, U. S. A.



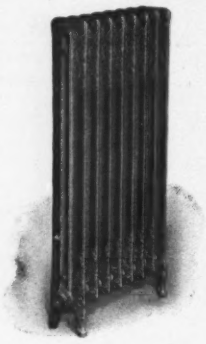
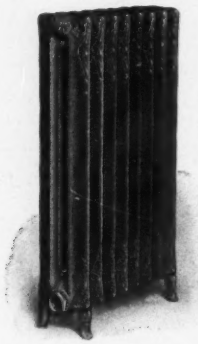
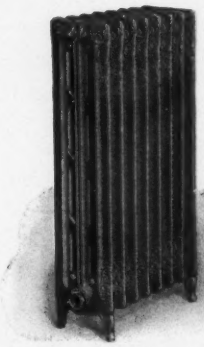
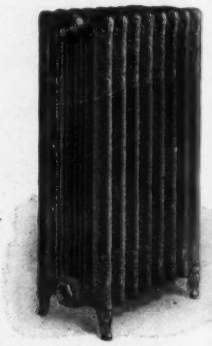
RELIABLE CONNECTIONS made between Lead and Iron Pipe by using the Raymond Ferrule—the only Lead Ferrule on the market which has an **extra thickness of lead over the shoulder,** giving strength where it is needed and where other lead ferrules are weak. The genuine article bears our label

RAYMOND LEAD CO.

Crosby Spring Seat Globe and Angle **Valves** All Parts Interchangeable. All Parts Removable. Tested for Highest Pressures. **Leak-Proof** CROSBY STEAM GAGE & VALVE CO. Boston New York Chicago

CALOR RADIATORS

One—Two—Three—Four Columns
Steam and Water—Plain
and Ornamental
All Heights

To secure
their use write
in your specifications

"Calor Radiators

Made by

Holland Radiator Company"

38 Dearborn Street
CHICAGO

Plant at Bremen, Ind.

MALLEABLE IRON VISES, HARDENED STEEL JAWS—Fully Guaranteed

E. HENDERER & CO., - - - WILMINGTON, DEL.

Write for a brand new copy of "GRAPHITE as a LUBRICANT," Tenth Edition. All the newest, freshest and best information on the modern practice of graphite lubrication. Get FREE COPY 37-C. : : : : : : :
JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J.

Modern Plumbing, Steam and Hot Water Heating, by James J. Lawler. Explaining the most modern Methods of Plumbing, Steam and Hot Water Heating. Bound in cloth, $5.

DOMESTIC ENGINEERING, 58-64 North Jefferson Street, Chicago

HOMESTEAD VALVES

For Difficult Service

Homestead Valve Mfg. Co., Pittsburg, Pa.

REGULATORS
STEAM
WATER

ROSS VALVE CO.
TROY, N. Y.

INDEX TO ADVERTISEMENTS ON PAGE XXVI

DRAINAGE FITTINGS

We manufacture and carry in stock at Chicago and our branch houses throughout the country, a complete line of black and galvanized drainage fittings. Any size and style, in any quantity, can be furnished promptly.

Crane fittings are made with a shoulder, and are of the same inside diameter as pipe. The pipe screws in up to the shoulder, making a continuous passage and leaving no pockets for solid matter to lodge in.

We have exceptional facilities for furnishing galvanized drainage fittings promptly. The work of our galvanizing department is of a very high character, and our galvanized fittings are unequaled.

Malleable Iron Drainage Fittings, made from regular patterns, can be furnished in any quantity on short notice.

BOSTON
NEW YORK
PHILADELPHIA
BALTIMORE
BIRMINGHAM
CINCINNATI
ST. LOUIS
MINNEAPOLIS
ST. PAUL
DULUTH
WATERTOWN S.D.
OMAHA
FARGO, N. D.
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WRITE FOR COMPLETE POCKET CATALOGUE

CRANE CO.

CHICAGO

ESTABLISHED 1855

OKLAHOMA CITY
SIOUX CITY
SALT LAKE CITY
SAN FRANCISCO
OAKLAND CAL.
LOS ANGELES
PORTLAND, ORE.
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MEMPHIS
DALLAS
WINNIPEG, MAN.

GURNEY

HOT WATER HEATERS,
STEAM BOILERS, RADIATORS.

THEY GIVE COMPLETE SATISFACTION
Send for latest Catalogues

GURNEY HEATER MFG. CO.,

N.Y. BRANCH III FIFTH AVENUE, NEW YORK.

188-200 Franklin St., Cor. Pearl, BOSTON, MASS.

THE CENTRAL BRASS MANUFACTURING CO.

TRADE MARK

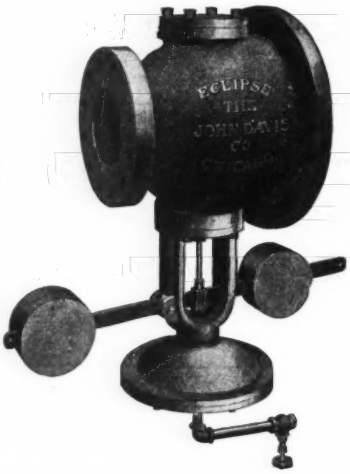
OF CLEVELAND, OHIO
ARE MAKERS OF

TRADE MARK

HIGH GRADE BRASS GOODS FOR PLUMBERS AND WATER WORKS

"ASK THE MAN WHO USES THEM"

"Eclipse" Vacuum-Pressure Regulating Valve



Endorsed and used by all the companies installing vacuum systems of heating.

For Use in Atmospheric Vacuum or Very Low Pressure Heating Systems

The Valve is constructed with an independent diaphragm which is actuated by pressure taken from low pressure side at a distance from the Valve at a point of regulation designated by the company installing the system.

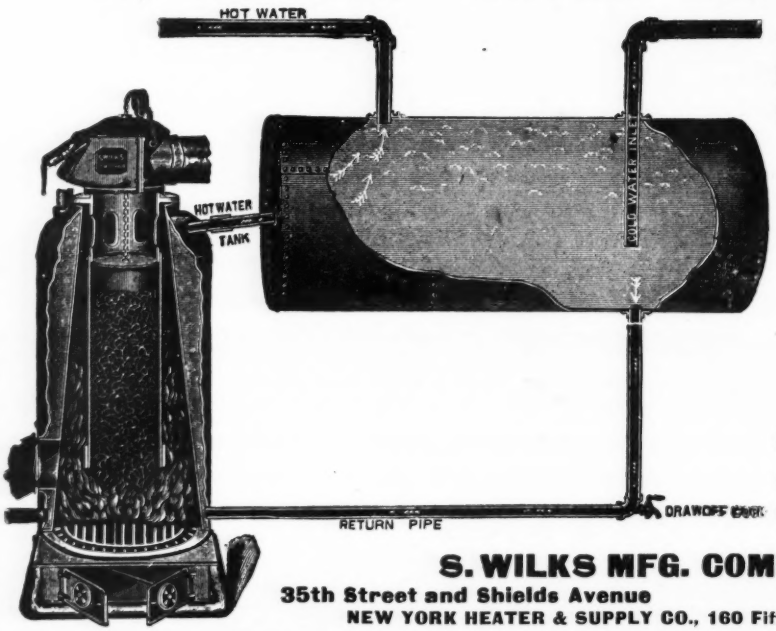
The diaphragm is very sensitive and will promptly respond to the slightest variation in pressure.

The Valve is a two-seated Valve, so constructed that the seats adjust themselves to any change of temperature, consequently they are always tight under varying pressures.

Our 44 Page Steam Specialties Book FREE.

THE JOHN DAVIS COMPANY
HALSTED 22ND AND UNION STS - CHICAGO

WILKS HOT WATER HEATERS



For Heating Water for

Residences, Apartment buildings, Hospitals, etc.

Steel Storage Tanks

Send for our New Catalogue

S. WILKS MFG. COMPANY
35th Street and Shields Avenue CHICAGO, ILL.
NEW YORK HEATER & SUPPLY CO., 160 Fifth Ave., New York City

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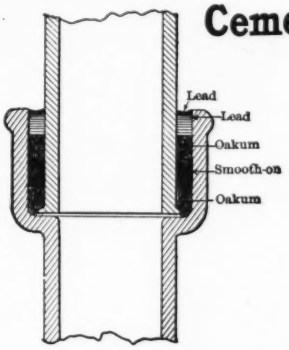
SMOOTH-ON
TRADE MARK

Iron **Cement**

For Soil Pipe



Write for 100 page book, showing how to make lead Joint without caulking lead.

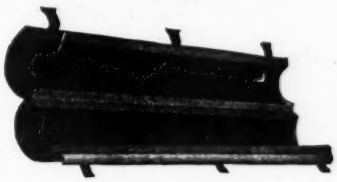
RED LABEL FOR PLUMBERS

SMOOTH-ON MFG. CO.

JERSEY CITY, N. J.

CHICAGO OFFICE: 61 North Jefferson Street.

THE MOST ADAPTABLE COVERING FOR HEATING SYSTEMS



"ASBESTOCEL" is exclusively a Heating System Covering. It is manufactured to overcome all difficulties peculiar to Heating System Insulation. "Asbestocel" differs greatly in construction from other coverings. Its corrugations run around the pipe instead of lengthwise, and block air circulation, thereby preventing radiation.
Made in sectional form for steam and hot water pipes and sheets for furnace pipes.

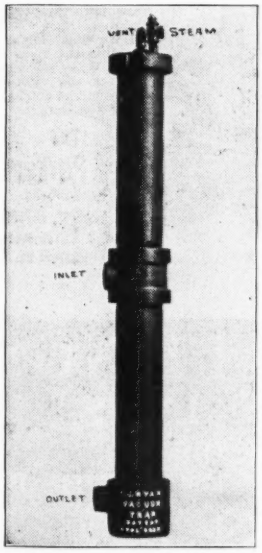
Write nearest branch for descriptive booklet

H. W. JOHNS-MANVILLE CO.

Manufacturers of Asbestos and Magnesia Products, Asbestos Roofings, Packings, Electrical Insulating Materials, "Noark" Fuse Devices, Electrical Railway Supplies, Etc.

New York	Boston	Pittsburg	New Orleans
Milwaukee	Philadelphia	Cleveland	Kansas City
Chicago	St. Louis	Minneapolis	Los Angeles
	Seattle	San Francisco	London (454)

VACUUM HEATING

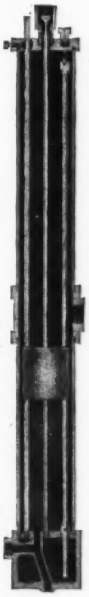


is the coming

System

I have one

that works



Write for Booklet "A"

E. J. Ryan 117 Walnut Street, Danville, Ill.

Hanna Ball Joint Pipe Hanger

SIMPLEST

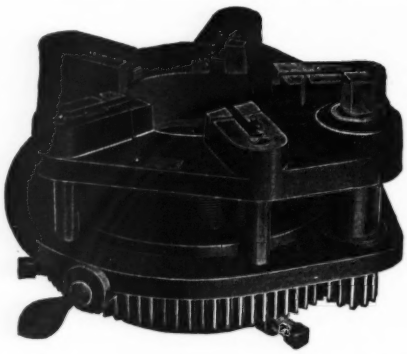
No. 1.

MADE OF MALLEABLE IRON, CARRIED IN STOCK AND FOR SALE BY ALL SUPPLY HOUSES.

STRONGEST

The Penn Engineering Company

Philadelphia, Pennsylvania



This is our No. 3 Machine. Capacity from 4½ to 8 inches inclusive.

The "Toledo" Pipe Threader
IS DIFFERENT

ONE MAN can EASILY thread any size the tool will take. And they don't cost much. Ask your jobber about it.

Send for descriptive catalogue to

The Toledo Pipe Threading Machine Co.
TOLEDO, OHIO, U. S. A.

IT'S PRACTICAL
The "IDEAL" Chain Wrench
Grips Everything

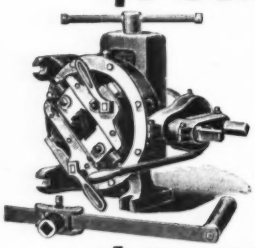
PIPES
VALVES
FITTINGS
FLANGES
AND
CASTINGS
OF ODD
FORM

TRY IT

ILLUSTRATED BOOKLET OF "GRIPS" FREE
ASK YOUR JOBBER OR WRITE TO US

KROESCHELL BROS. CO.
47 ERIE STREET, : : : : CHICAGO

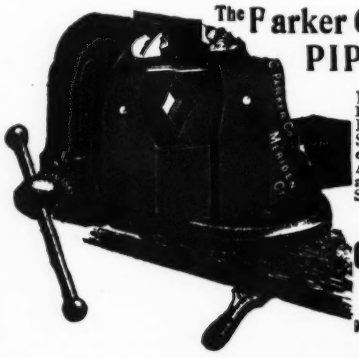
PORTABILITY



is one of the strongest features of the Armstrong Pipe Cutting and Threading Machines. Even the 4 inch size can be carried to the work where desirable. The Armstrong Machines, are for hand or power interchangeably and the drive can be changed in a moment. The 6 inch size can be run by an apprentice without assistance. Catalogue of Machines, stocks and dies, vises and wrenches, and pipe fitter's tools generally, will be sent upon request.

THE ARMSTRONG MFG. COMPANY
284 Knowlton St., Bridgeport, Conn.

The Parker Combination PIPE VISE...



Especially adapted to Plumbers and Steam Fitters use. Made in Six different sizes and every Vise all right. Ask for the "Parker" and you get a good tool Sold by jobbers.

The Chas. Parker Co
Factories:
MERIDEN, CONN.
New York Sales Rooms, 32 Warren St.

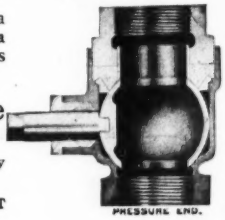
HUXLEY IS RIGHT

Adapted for all purposes where a quick, full straight opening and a positive joint are desired. Works under 200 pounds or less.

Huxley Blow-off Valve
None can compare with the Huxley

Order one and return if unsatisfactory
Made from 1 1-2 to 3 in.

CATALOGUE FREE ON REQUEST
Mentioning This Journal

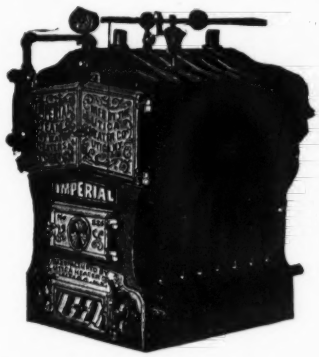


Huxley Valve Co., 145 Main St., Buffalo, N.Y.

PIPE FITTINGS
AND VALVES
FOR THE
HEATING AND PLUMBING TRADE
TRADE MARK
JOHN SIMMONS CO.
104-110 Centre Street, NEW YORK.

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

Famous Imperial Boilers



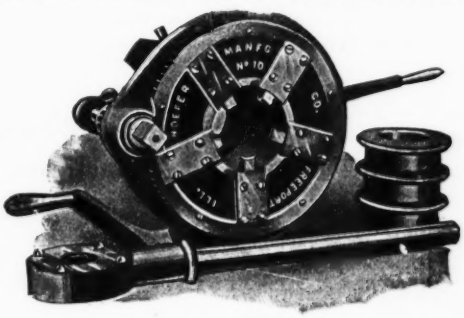
"IMPERIAL"

We want every steamfitter to have our new catalogue of Imperial Boilers—and learn all about this wonderful line of Sectional and Round Steam and Hot Water Boilers. There are no better boilers made at any price. Send for catalogue to-day. : : : : : : :

Utica Heater Co., Utica, N. Y.

Chicago Representatives,
Chicago Heater & Supply Co., 56 and 58 Dearborn St., Chicago, Ill.

Better Results, Less Labor



HOEFER
Adjustable Pipe Threading Machine

Made in three sizes

ONE MAN EASILY WORKS IT.

Will cut pipe to a standard taper. Will cut over and under standard sizes. Will cut a running as well as a taper thread. Will cut all sizes of pipe with one set of dies. No changing of dies. No losing of dies. Will cut nipples.

Send for Folder

HOEFER MFG. CO.
FREEPORT, ILLINOIS

A large number of you who have not taken advantage of my free trial offer have refrained from doing so because you think that there are some hidden strings tied to it.

The thousands who have accepted know that the offer means just what it says—that it is a free trial offer in every sense of the word—that there is not a string of any sort tied to it.

Read my offer. Fill out and mail the coupon to me and I will send you one of my Dies and size you request for ten days' free trial. You are not to send me a single penny in advance but at the end of the ten days' test you are either to return the Die at my expense or send me its price.

I claim that the ease with which the Nye Die will thread the hardest, toughest steel pipe, will cut the labor and therefore the expense of pipe-threading square in two. And this saving will more than pay for the Die in less than two days. Therefore the Die will have saved you its cost more than a week before you pay me. ¶ If these things are true, and the free trial will prove them true, then you are losing money every day you are without my Die.

Can you afford to suffer this loss? At least, can you longer afford to ignore my offer whereby you can prove these things without risking or spending a penny. ¶ Signing the coupon today won't save the money you lost last week or last year but it will save you many dollars and no end of trouble from now on. So you had better get the coupon back to me by the first mail. Yours for a square deal,
"NYE."

Nye Tool & Machine Works

196-198 S. Clinton St., CHICAGO

Please send me one _____inch Nye Die for trial. Unless I find it saves both time and money I will return it within ten days at your expense.

Name _____

P. O. _____

State _____

Utilize The Exhaust Steam

Otherwise Nearly 90 Per Cent of the Energy Extracted from Fuel is Lost

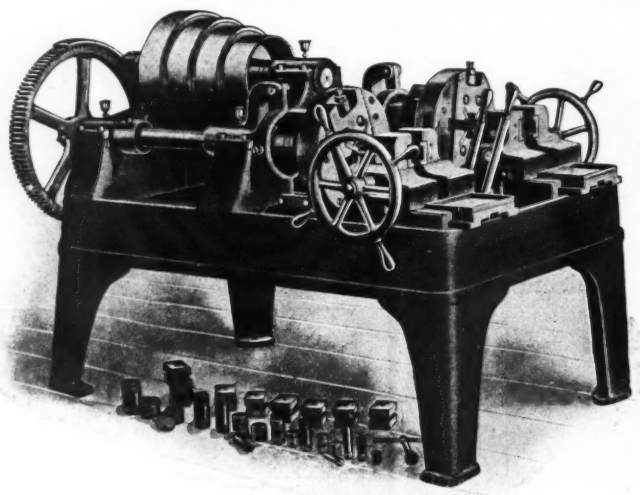
THE MOST PRACTICAL and most profitable economy in a power or light plant is the utilization of the exhaust steam. This fact presents a valuable opportunity to create a District Steam Heating Plant without a sensational increase of the original investment, by installing our system of **District Steam Heating.** Thirty year's experience has made our system perfect. We invite correspondence with those interested. Send for our new sixty page booklet. It is Free.

American District Steam Company

Main Office: LOCKPORT, N. Y. **Western Office: Monadnock Bldg., CHICAGO**

EXTRA EXTRA EXTRA

The Earning Capacity of a Machine is What Counts.
Investigate this point before you buy elsewhere.



Our No. 2 Nipple and Pipe Threading Machine

will thread and ream complete 2,000 ¾" short or long nipples in 10 hours. A trial of our machine will prove this assertion.

Write us today for one of our catalogues.

We also make Murchey's Patent Automatic Collapsing Tap and Reamer Combined.

Murchey Machine & Tool Co., Porter & Fourth Sts., Detroit, Mich.

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

"TRIMO" PIPE CUTTER
Gold Medal, St. Louis, 1904

Combination
1 and 3 wheel

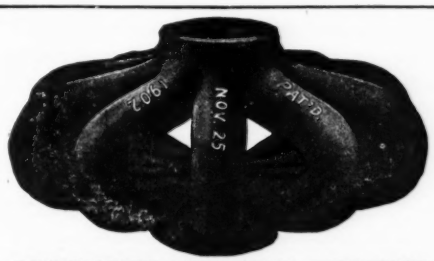
No thread in frame or roll block to wear out. Case hardened nut used instead. *Steel frame, drop forged. All parts Interchangeable and guaranteed.* Order from your dealer and insist on having "Trimo." **Handsome New Catalogue No. 42 Sent Free.**

Trimont Mfg. Co.
55 to 71 Amory Street,
Roxbury, Mass.
U. S. A.

THERMO VALVE

Pig Lead, Lead Pipe, Sheet Lead, Brass Fittings and Specialties.

Acheson Manufacturing Co.
RANKIN, PA.



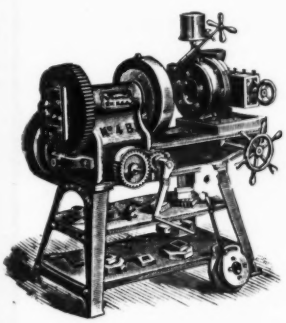
AUXILIARY HEATING SECTION
is also in use for heater for utilizing exhaust heat of gasoline engines
Anderson-McCutchen Co., Peekskill, N. Y.

Temperature Regulation

ALL KINDS THAT ARE WORTH WHILE
A new circular on control of **Hot Water Tanks** is now ready

NATIONAL REGULATOR CO.

334 Dearborn St., Chicago **1135 Broadway, New York**



SAUNDERS the STANDARD

The claim of many makers is: "As good as Saunders". Get the standard at first by buying the Saunders tools.

Our stocks and dies are light, strong and of superior design and finish. Send for catalogue.

We make Pipe Cutting and Threading Machines to cut and thread up to 18 inches O. D.

No. 4-B Pipe Cutting and Threading Machine ⅛ in. to 4 in. Hand or Power.

D. SAUNDERS' SONS, 35 Atherton St., YONKERS, N. Y.

A Contrast.

"A French family can live well on what an American family throws away," is an old saying. And a great list of buildings equipped with the

WEBSTER SYSTEM OF STEAM CIRCULATION

are heated perfectly with steam that has little or no pressure left,—the steam that with other heating systems is thrown away. "Dead steam is worth nothing," people say, "because without pressure we can't get it where we want it."

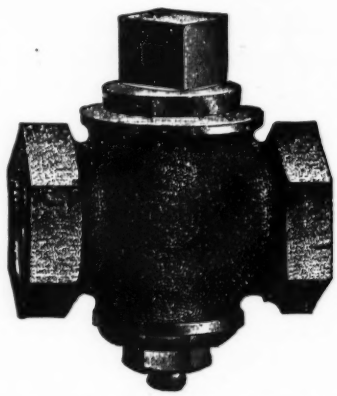
The WEBSTER SYSTEM can.

Write to-day for booklet 2 H.

WARREN WEBSTER & Co.
CAMDEN, N. J.

STEAM COCKS

PERFECTLY GROUND



EVERY COCK TESTED

SEND FOR CATALOG

EVERYTHING IN BRASS FOR THE PLUMBER AND SOME THINGS FOR THE STEAMFITTER

EAGLE BRASS WORKS
DETROIT, MICHIGAN

Eight different styles of floor and ceiling plates ranging in size from ¼ inch to 8 inches. Carefully finished, all being coppered before nickeling. Send for catalog and prices to the old original company.

The Beaton & Corbin Mfg. Co.
Southington, Conn., U. S. A.

Samples Free

to those who are interested in testing the best methods of connecting Radiation and Heating Boilers.

Zinc Coated Steel Slip Nipples are Rust-proof; impervious to distilled water; not affected by electrolysis; all true to size; elastic and adaptable to variation in boring castings.

The Pratt Chuck Co., Frankfort, N. Y.

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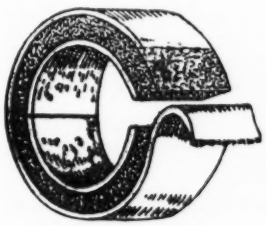
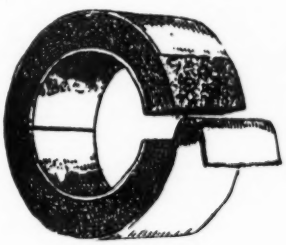
Don't Delay Consideration Of This Most Important Matter





Every steam-power or heating plant, refrigerating plant or public building in your town ought to have its piping covered. We show you how to get the business, furnish you with free samples and give you all the knowledge required to make the sale and put on the covering. Write us today for information which will set the ball rolling. Now is a good time to begin.

Norristown Magnesia & Asbestos Co.

NORRISTOWN, PA.

Formerly known as, "Norristown Covering Co."

REPRESENTATIVES:

E. Curtis, Boston, Mass.
John R. Livezey, Philadelphia, Pa.
John R. Livezey, Washington, D. C.
Phelps Bros., New York, N. Y.
Chicago Heater & Supply Co., 56–58 Dearborn Street, Chicago, Ill.

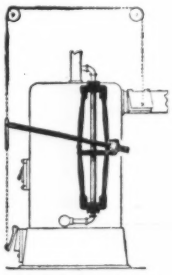
WE HAVE A MOST EXCELLENT PLAN

FOR HELPING THE DEALER TO SELL
POWERS HEAT REGULATORS
THERE IS MONEY IN IT FOR YOU
WRITE FOR PARTICULARS

The
POWERS REGULATOR CO.
40 DEARBORN STREET, CHICAGO, ILL.

SATISFACTION TO YOUR CUSTOMERS AND MORE PROFIT TO YOU

That is what it means to handle the Lawler Temperature Regulator for House Heating Boilers and Hot Water Tanks.


Hot Water Regulator Connected

No auxiliary power is required and the device is practically indestructible. Ask for our Thermostatic Catalogue from our agents or headquarters

Philadelphia—Jos. J. Brogan, 810 Race St., Philadelphia, Pa.
Western—The Norvall Mfg. Co., 154 Lake St., Chicago, Ill.
Maine—W. T. Montgomery, P. O. Box 834, Bangor, Me.
New Orleans—Aschaffenburg Co., New Orleans, La.

THE LAWLER REGULATOR COMPANY,
473 West Broadway : : : : : New York City, U. S. A.

Solder—What it is, How to make it and How to use it. By W. A. BRADFORD, of Boston, Mass. This booklet cannot fail to be of benefit to the plumber who studies it carefully, Price 10 cents, prepaid.

Domestic Engineering, 58-64 N. Jefferson St., Chicago, Ill.

MANGANESITE PASTE, **(Registered)**

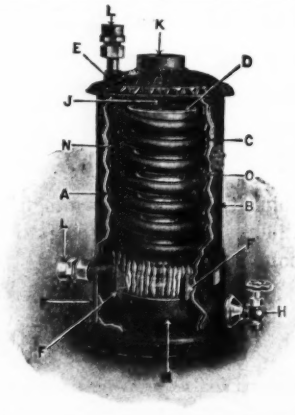
Is the ideal Jointing Material. Is efficient, economical, permanent or temporary (as desired). No Waste. Does not make a rust joint. Unites two metals as one. Valuable for Porous Castings.

WALCH & WYETH, · · 87 Lake St., CHICAGO

Lawson Improved Gas Water Heater

Is the most economical and up-to-date device on the market for furnishing hot water for household purposes. Send for booklet, giving full description.

LAWSON MFG. CO.
Homestead, Pa.



Leaky Joints

Are no menace to perfect heating when the new

Vacuum-Vapor

system is used. Better than the best—more profit to you—truth telling talking points—satisfied customers. Hot water systems easily and cheaply changed.

The "V-V" perfect steam trap for city and factory heating with live or exhaust steam.

PLANS FURNISHED and EXCLUSIVE AGENCIES given recognized firms.

Vacuum-Vapor Company
MOLINE, ILL.

New York Heater & Supply Co.,
160 Fifth Avenue, New York, N. Y.
Sole Eastern Agents

"V-V" Steam Trap

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

PROFITS

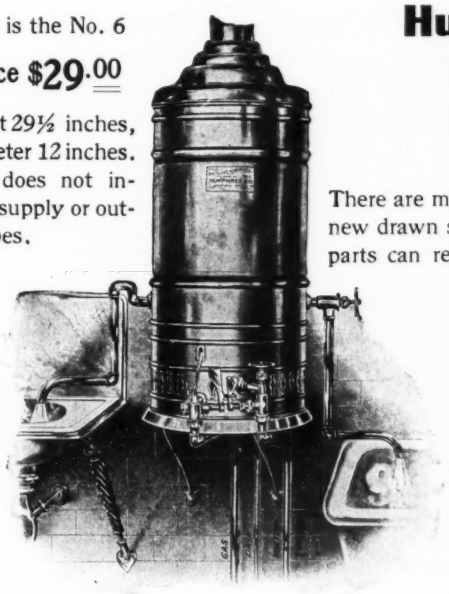
Large and Satisfactory

CAN READILY BE MADE IN HANDLING

This is the No. 6

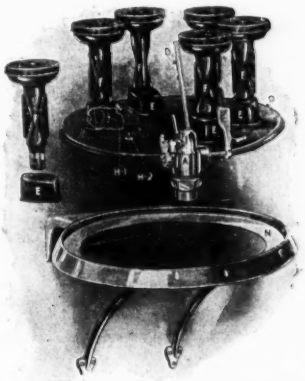
Price $29.00

Height 29½ inches, Diameter 12 inches. Price does not include supply or outlet pipes.



Humphrey Crescent Instantaneous Water Heaters

There are many Improvements in them. This shows our new drawn steel shelf and burner. The burner and water parts can readily be moved to any angle on the shelf.



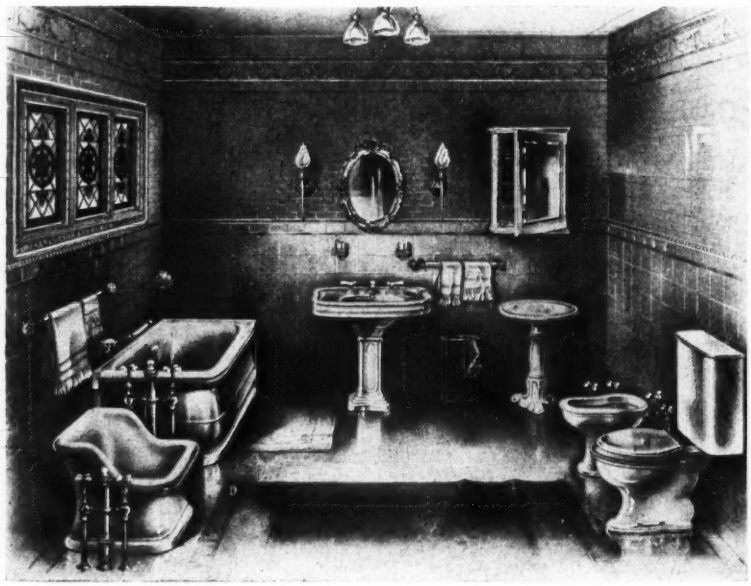
We have heaters for every purpose. Tell us your requirements. Every heater is guaranteed.

No. Heater	Gas Supply from Meter	Heats Gals. per Min. 50° in Temperature	Height	Diameter	Shipping Weight	Price
Non-Contact 2	¾ inch	2½	34⅝ inches	12 inches	70 pounds	$40 00
" 1	¾ inch	2	31 inches	10¾ inches	62 pounds	34 00
Contact 6	¾ inch	3	29½ inches	12 inches	60 pounds	29 00
" 8	½ inch	2½	28½ inches	10¾ inches	48 pounds	23 50

Our new catalogue illustrates the complete line of these heaters. Sent free on request. We quote liberal discounts and help you make sales. Why not send us your orders? We make prompt shipments.

Humphrey Co., - - Kalamazoo, Mich.

The only manufacturers in the World of a COMPLETE LINE OF INSTANTANEOUS WATER HEATERS.



Architect and owner appreciate the advantage of specifying Wolff plumbing material exclusively. It means a great deal both practically and artistically to have each item of the plumbing equipment the product of one corps of designers and of one manufacturing organization.

L. WOLFF MANUFACTURING CO.

ESTABLISHED 1855

MANUFACTURERS OF PLUMBING GOODS EXCLUSIVELY

THE ONLY COMPLETE LINE MADE BY ANY ONE FIRM.

SHOW ROOMS, 91 DEARBORN STREET

DENVER CHICAGO TRENTON

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

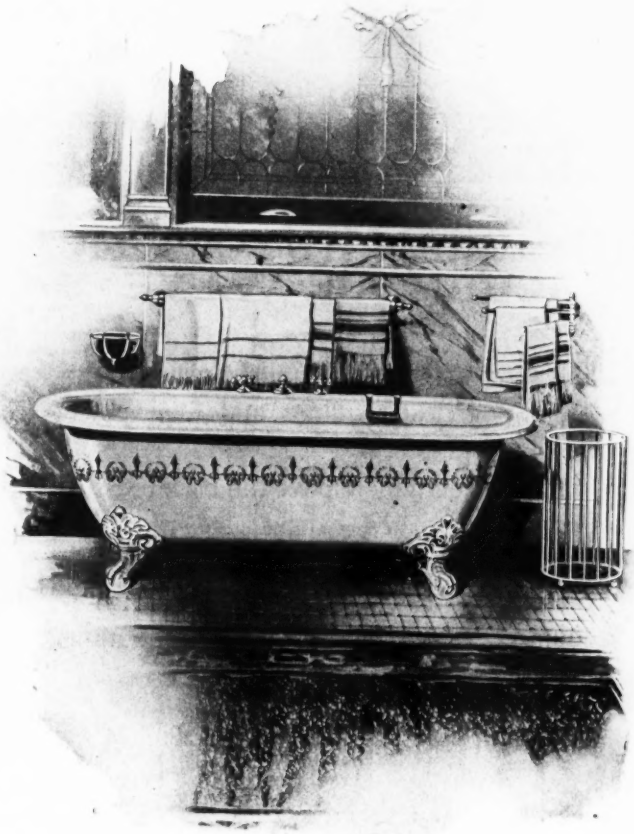
"Standard"
PORCELAIN ENAMELED BATH

The Albion is the most graceful and symmetrical bath fixture made. With the growing desire upon the part of discriminating builders for higher grade fixtures, it is becoming more popular each year. Its presence in your showroom will reflect your good taste and gain the appreciation of your customers.

"Standard" Porcelain Enameled Bath and Nickel-plated Imperial Bell Supply and Waste Fittings, with ¾-inch I. P. Size Supply Pipes with Unions at floor. Exterior finished in No. 1 Zinc White with Plate P 358 "Empire" Border.

DIMENSIONS

Width over rim - 34½"
Width of roll rim - 4¾"
Height to top of rim 23½"
Depth inside - - 18½"



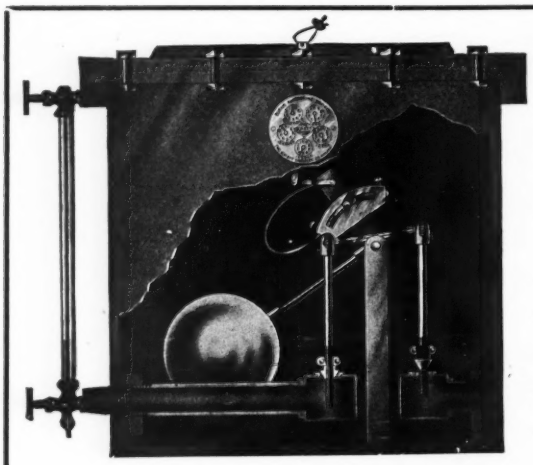
ALBION—Plate P 200

Nominal Sizes	4½'	5'	5½'
Plate P 200 as described, with decoration	$82.00	$85.50	$89.00
Plate P 200, less decoration	58.00	61.50	65.00
Length over rim	5' 3"	5' 9"	6' 3"

Add for China Indexes on fittings, $1.25. (Specify when ordering.)

Standard Sanitary Mfg. Co.

PITTSBURGH, U. S. A.



THE COMBI RECORDING STEAM TRAP

The most perfect condensation meter on the market.

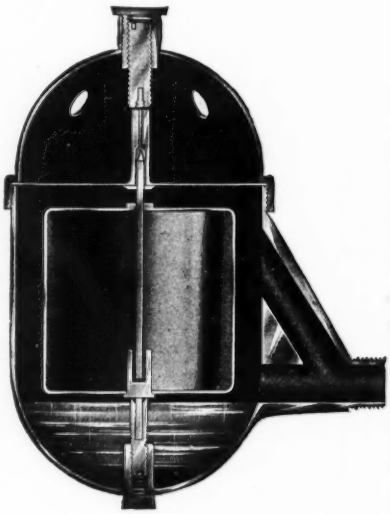
Absolutely impossible to flood or pass water through it without registering. It works on large quantities of water and works slowly, is very accurate and sensitive and is so built that nothing can stick or stop it.

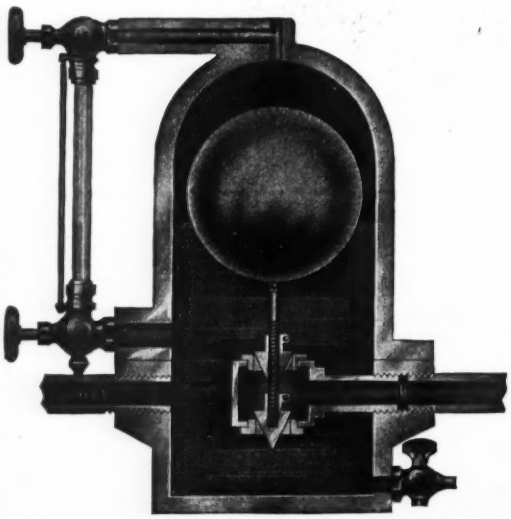
THE DURAM AUTOMATIC VACUUM AIR VALVE

The salvation of Central Station Heating Plants having long overloaded lines and high power pressure.

This valve will entirely remove the back pressure from engines on isolated exhaust steam heating plants, more effectively than any other system known.

A vacuum valve that works right all the time.





A MODERN STEAM TRAP

The most perfect low pressure trap built automatically vented, cannot stick or air-bind. A balanced valve trap without a lever. The largest capacity of any trap known.

The Schott Specialty Co.

Manufacturers of High Grade Steam Specialties

American Trust Building, CHICAGO

ALL GOODS GUARANTEED PERFECT OR MONEY REFUNDED.

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

Not How Cheap, But How Good

The purchase of Employers' Liability Insurance is one of the most important investments you can make. If you select your company carefully and make sure you are getting a suitable policy, it is an investment that will pay big dividends in service, and in responsible care of your interests.

Above all things don't make the mistake of placing your insurance with a company merely because you can get a cut rate. Cheap insurance is never good insurance. You will be safe in selecting the Maryland Casualty Company because of its high financial standing and unsurpassed record for fair treatment of policyholders.

The Perfect Form of Liability Insurance

sold only by this Company is the best. Do you want us to prove it? WRITE FOR SAMPLE POLICY—Liability Form 260-E, and descriptive booklet.

MARYLAND CASUALTY COMPANY

Assets $3,691,447.50. BALTIMORE, MARYLAND. Surplus to Policyholders $1,722,046.77.

The Maryland continues to sell, at fair rates, the Standard Form of Liability policy, which is as good as the best sold by any other company.

MARYLAND CASUALTY COMPANY
MERITS COMPLETE CONFIDENCE

The Company also writes Burglary, Sprinkler Leakage, Elevator, Teams, Steam Boiler, Water Damage, Physicians' Defense, Plate Glass, Personal Accident, Disability, Health, Fly Wheel and all other classes of Casualty Insurance.

PITTSBURGH VALVE & FITTINGS CO.

Manufactures and carries in stock a complete line of the following:

Standard Screwed Fittings
Standard Flanged Fittings
Extra Heavy Screwed Fittings
Extra Heavy Flanged Fittings
Long Turn Screwed Fittings
Long Turn Flanged Fittings
Recessed Drainage Fittings
Malleable Iron Fittings
Iron Body Gate Valves
Iron Body Blow-Off Valves
Brass Wedge Gate Valves
Expansion Joints
Steam Traps
Pipe Hangers

WORKS, BARBERTON, OHIO

Address all communications to General Office, Frick Bldg.

PITTSBURGH, PA.

ZERO

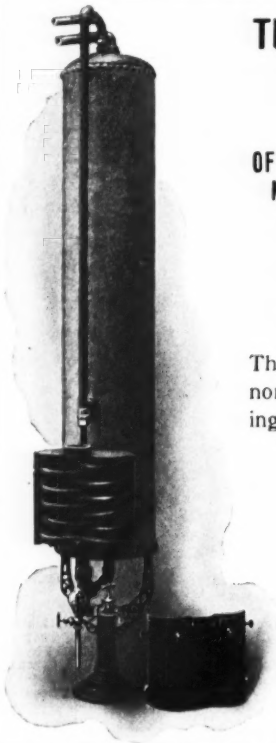
or 40 above is all alike to

THE BECKAM DAMPER REGULATOR

It does everything but put in coal and remove ashes. Keeps the temperature in the house at 70°, saves coal—saves money for the owner—makes money for the seller. Write us about it.

HENION & HUBBELL
61-69 N. Jefferson Street
CHICAGO

EVERY ONE GUARANTEED



Three Distinctly Exclusive Features

OF THE HOMESTEAD AUTOMATIC WATER HEATER

SIMPLICITY
EFFICIENCY
DURABILITY

The most durable, economical and quick heating water heater on the market. Our illustrated booklet shows the valuable features of the HOMESTEAD HEATER. Write for it.

HOMESTEAD HEATER & MFG. COMPANY.

Homestead, - - Pa.

Jobbers Like It

THE PEER

It is a boiler stand and heater in one, and therefore helps the jobber to sell a tank.

100 gallons made hot with TWO CENTS' worth of GAS.

It has no dead arms nor pipes to clog up, and gives absolute satisfaction.

Write for exclusive agency and terms

The Peer Water Heater Co., Inc.
39 STATE ST., CHICAGO

Fernando W. Pripps Co., 131 Oneida St., Milwaukee, Wis. Geo. R. Ives, 423 West 7th St., Los Angeles, Cal. G. W. Burchard, 412 Main St., Kansas City, Mo.

WE MAKE ONLY HIGH GRADE VALVES

YET OUR PRICES ARE RIGHT

National No. 5 Lock Shield

The **Jobber** can sell the **National** and make good money.
The **Fitter** can install the **National** and please his customer.

Our *National* No. 5 Lock Shield Valve cannot be tampered with by anyone, as key is in possession of Engineer or Janitor, who will adjust the valve when necessary.

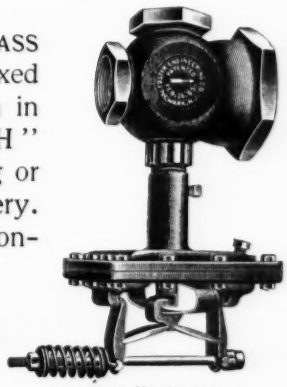
Write us for new catalogue of the entire National family showing also our line of Gauges, Hot Water Thermometers and Compression Air Vents.

NATIONAL STEAM SPECIALTY COMPANY

230 E. WASHINGTON ST., CHICAGO, ILL.

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

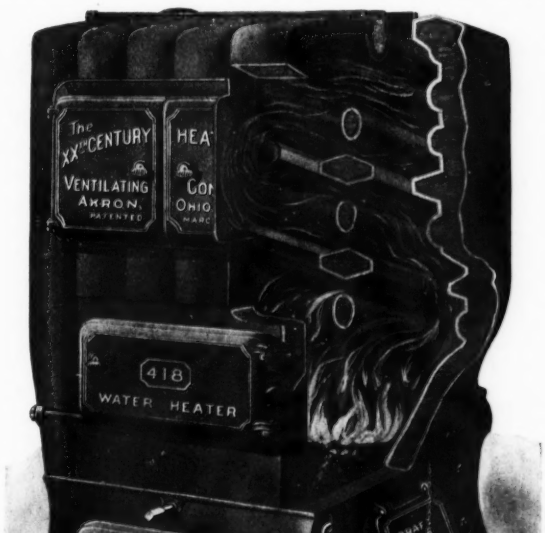
should be used wherever reduction and regulation of steam, air, gas or water pressure are required in engineering or industrial operation for power or heating. ¶ THE FOSTER "CLASS W" HIGH PRESSURE REGULATOR will preserve a fixed uniform lower delivery pressure regardless of fluctuation in initial or boiler pressure. ¶ THE FOSTER "CLASS QH" LOW PRESSURE VALVE is unequalled for steam heating or other low pressure service up to 15 pounds delivery. ¶ Send for a Foster Catalog and learn the utility and construction of all Foster Valve Specialties.



Class "QH" Valve

FOSTER ENGINEERING CO.

NEWARK, N. J.



XXth Century Water Tube Sectional Boilers, Warm Air Furnaces, Radiators and Supplies

Special Features

Large amount of fire surface.
Kind of fire surface. Inclined tubes.
Rapid Circulation. Perfect mixture of gases.
Perfect combustion. Superheating chamber.
Guaranteed saving in fuel. Convenient to fire.
Convenient to clean. Simple to install.

Inclined tubes, fire and water travelling in the same direction, following nature's laws. Every inch of fire surface is also water surface. The largest fire area, and water area, confined within a certain space, and over a certain sized grate. We defy contradiction, and we further defy anyone to show the equal.

If you were going to heat a gallon of water in the shortest space of time, with the least quantity of fuel, would you put it into a tin horn, having a narrow base in contact with the fire, or would you put it into a large wash boiler, exposing the largest surface to the fire?

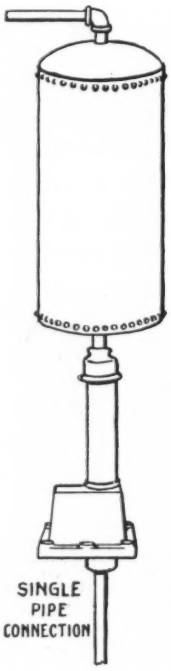
XXth Century Heating & Ventilating Co.

BRANCHES

Chicago, Ill. Nashville, Tenn. Cleveland, Ohio.
Memphis, Tenn. Denver, Colo. Atlanta, Ga.
Kansas City, Mo. Birmingham, Ala. Minneapolis, Minn.
Rochester, N. Y. Louisville, Ky. Pittsburg, Penna.

Home Office and Factory, Akron, Ohio

SEND FOR CATALOG



BUSINESS CANNOT REMAIN STATIONARY

IT MUST GO EITHER FORWARD OR BACKWARD. Sick or slow-working Hot Water Jobs is seasonable business for you and it should be your desire to push this work forward successfully by installing the

Phelps Heat Retainer

which will renew the life of the old plant and increase your prestige both for repair and new work. The PHELPS HEAT RETAINER saves 33⅓ per cent all around. BE FAIR TO YOURSELF AND WRITE FOR BOOKLET.

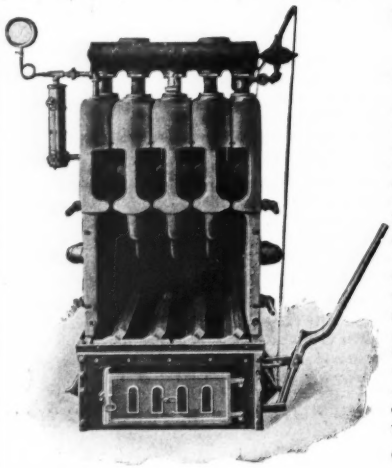
The

Ideal Heating Company

OSKALOOSA, IOWA

THE FIRST REQUISITE
OF A GOOD BOILER IS

SIMPLICITY



We Have It

PRUDENTIAL BOILERS are quick to respond—will evaporate more water to a pound of coal and heat more space quicker than any other cast iron boiler, having the greater portion of its surface exposed in direct contact with the fire. Consequently economical in consumption of fuel.

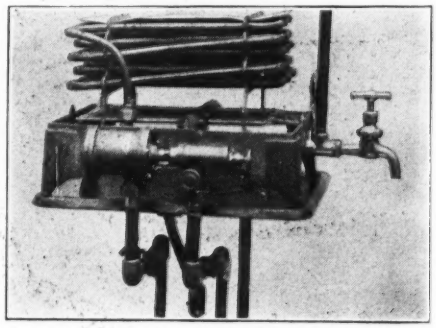
Catalogue Free.

Prudential Heating Co.

AKRON, OHIO

Crown Automatic
Instantaneous Water Heater

PATENT APPLIED FOR



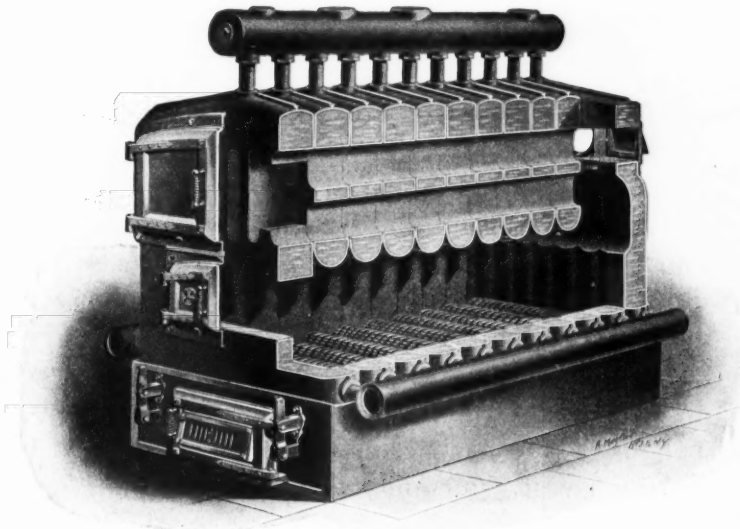
Especially for use in small flats, barber shops, etc. Write for circulars to

Varwig Manufacturing Co.

120 Opera Place, - - - Cincinnati, Ohio

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

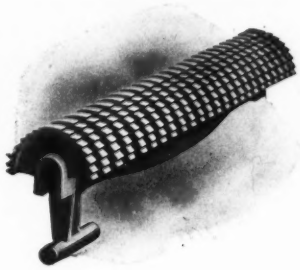
The Mercer Boiler



SECTIONAL VIEW

FOR

Steam and Water Warming



THE REED
(Patented)
Rotating Grate

Used in all Mercer Boilers

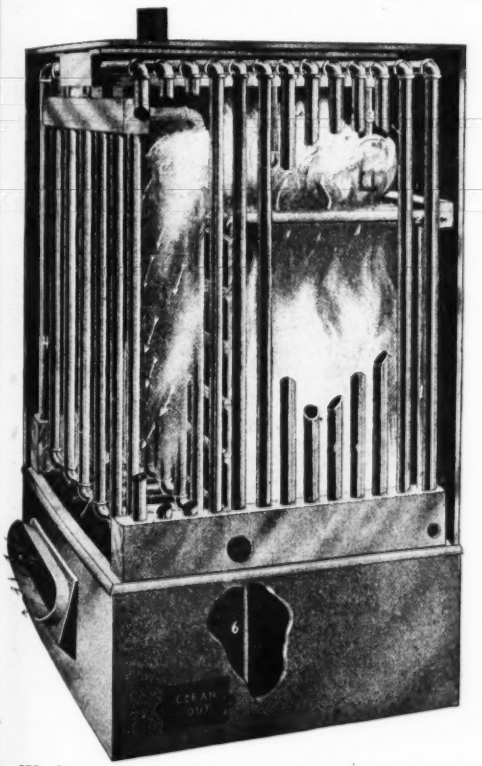
THE H. B. SMITH CO.
BOILERS and RADIATORS

WORKS
WESTFIELD, MASS.

SALESROOMS
133 Centre Street, New York, N. Y.
728 Arch Street, Philadelphia, Pa.

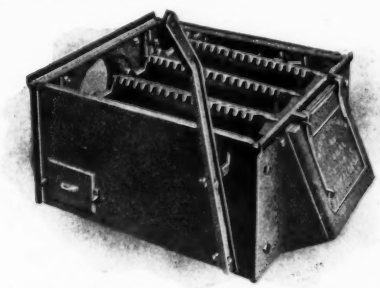
...TION OF THE SMOKE PROBLEM

A Fuel-saving of $900 Every Ten Years for a Residence is Worth Considering. Steam or Hot Water.



We issue a written guarantee with each heater sold, agreeing to refund the purchase price of any Phelps Smokeless Heater or Boiler that gives off the black smoke like other heaters or boilers, or gathers soot inside to be scraped off like other heaters and boilers do. A copy of this guarantee will be mailed **on request.**

We have worked on Smokeless Heaters since 1891. The present Heater is the successful crowning of our efforts. The life of the tubes in our old brick setting was from ten to twenty years under good conditions. The cost of renewing them, including tearing down and rebuilding brick work, was more than half the cost of a new heater. The life of the tubes in our iron casing and ash pit and dust box that shuts off the draft if ashes are not kept out of it, should be twice as long. The cost of renewing the tubes is about one-sixth the cost of a new heater. We have a patented circulating steam dome that we connect to our hot water heater and thus convert it into a steam boiler. Our booklet will tell you how Mr. W. S. Goodell saved $90.00 a year in fuel after he changed from the conventional cast iron boiler to a Phelps Smokeless Heater.



We show the ash pit, dust box, and rocking grates used on these heaters. We have the best coal grate ever made and sold in a heater or boiler. We call it the "Cyclone Grate", because nothing in the way of grates can stand before it in fair comparison.

Ideal Heating Company, Oskaloosa, Iowa.

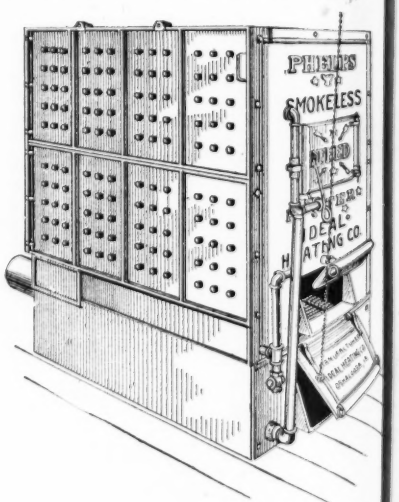
THE ONLY PRACTICAL SOLU

Is it Worth Anything to You?

The only practicable solution of the smoke problem, from the point of view of the soft coal consumer, is one which will provide for a more thorough combustion of fuel. Soft coal, according to expert tests, is 91.11 per cent combustible. Less than 50 per cent or to be absolutely exact, only 49 60 per cent of the fuel is really burned in the ordinary furnace. The remaining 50.40 per cent of combustible matter is not burned, but converted into the form of soot and carbon gases, and belched out into the atmosphere, filling the air with poisonous gases and covering the city with filth. It is easily seen that while this excessive waste militates against the comfort and cleanliness of the general public, the coal consumer at the same time is uselessly squandering one-half of his coal bills every day.

The American people are tired of being humbugged in this way. They have the time and the inclination to consider money saving ways with reference to home comforts. Is it worth anything to you to know how to extend your efforts for new business into this public favor? We will be pleased to show the way. All that we ask is your name and business address, to which we will send our new booklet, "Phelps Smokeless Heaters". You will find it full of amazingly strong pointers to the successful way.

Don't delay—write us today.



Designed and constructed to coke the soft western coals and burn the soot and gases

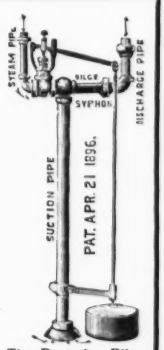
Ideal Heating Company, Oskaloosa, Iowa.

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

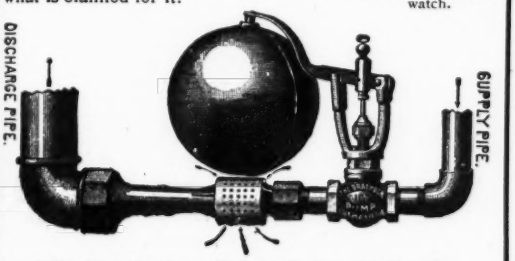
The **BRAENDER**
Automatic
CELLAR DRAINER
and BILGE SYPHON

Operated by Water or Steam Pressure

It is the best, therefore the cheapest. It is used in Municipal and U. S. Government Departments, endorsed by leading sanitary experts, and is guaranteed to do what is claimed for it.



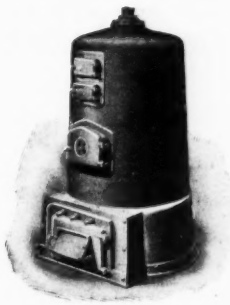
The Braender Bilge Syphon. Always on watch.



Sold to the trade only. Write for circular and testimonials.

PHILIP BRAENDER, 143 W. 125th St., New York
Sales Agent: W. N. McKenna Co., 75 Chestnut Street, Boston, Mass.

After Making Boilers



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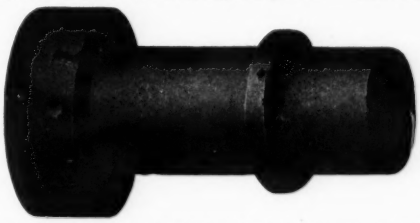

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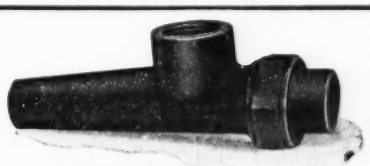

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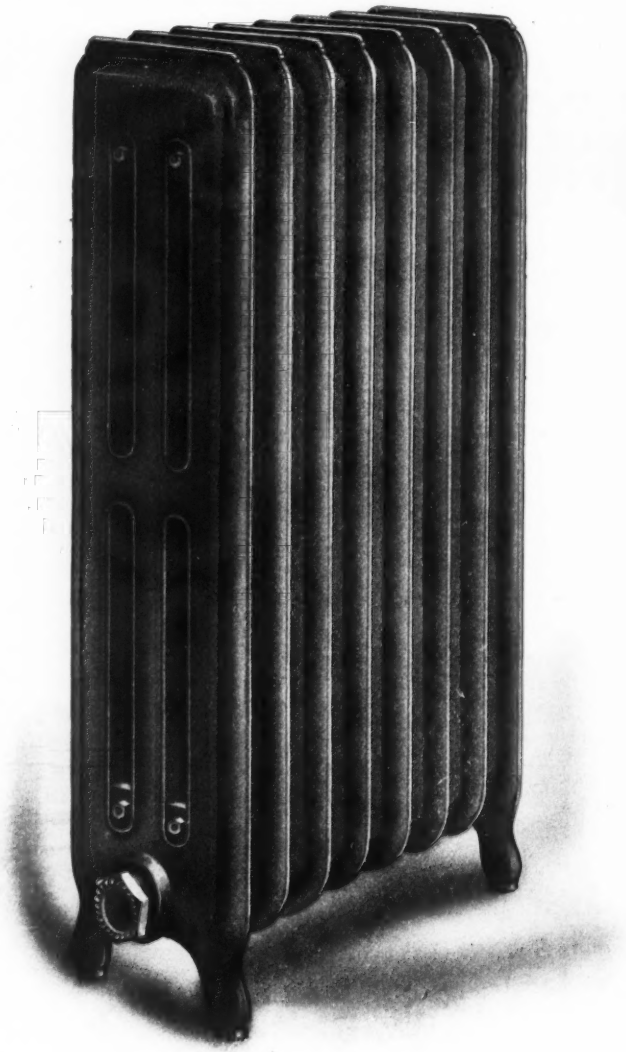

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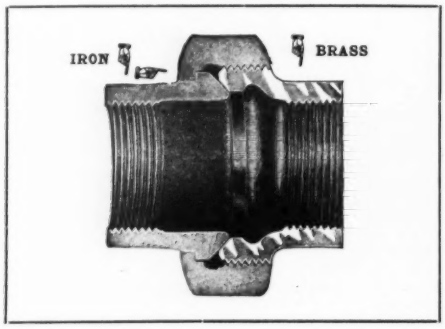

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Western Tube Co.

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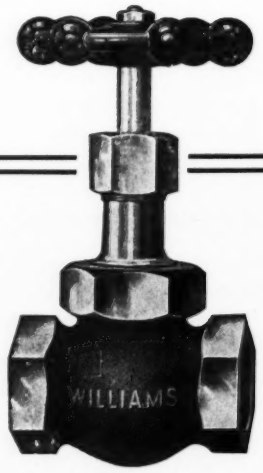

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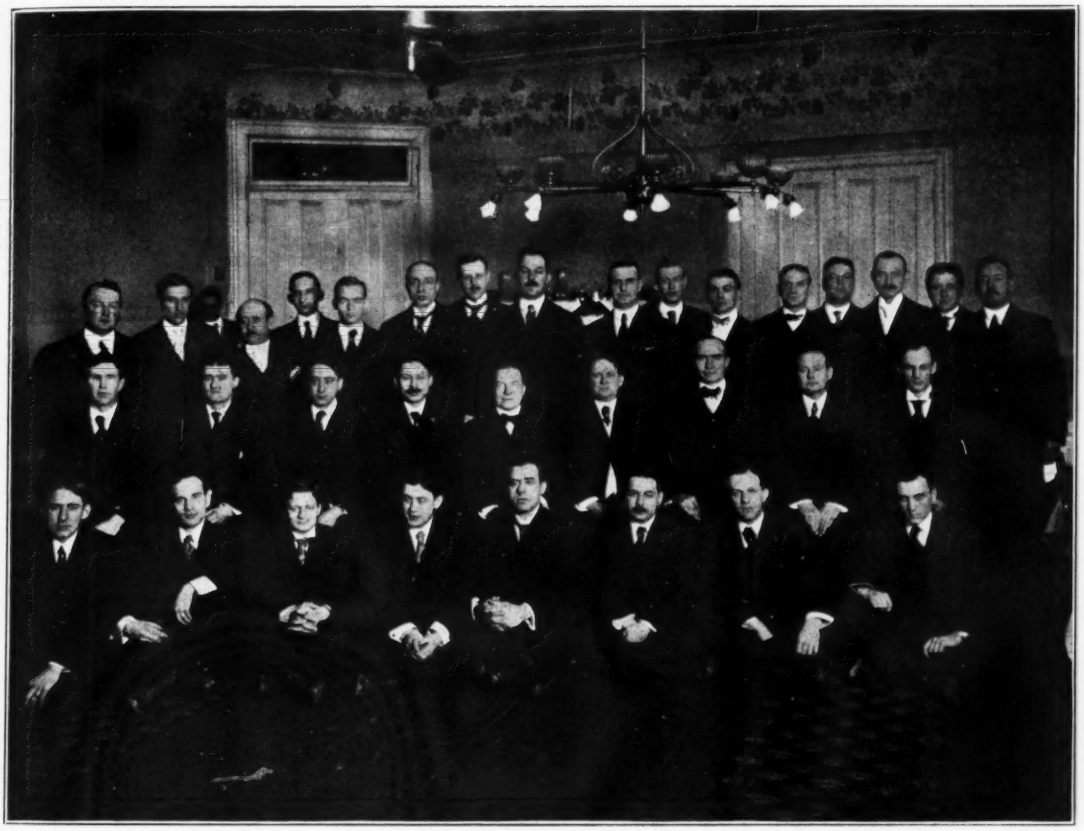

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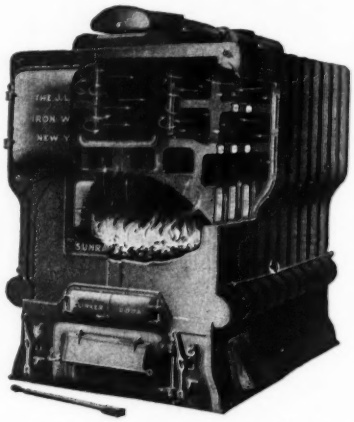

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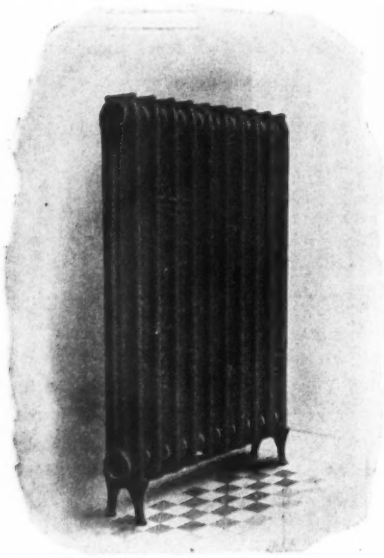

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DOMESTIC ENGINEERING

PLUMBING HEATING LIGHTING MILL SUPPLIES

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Progress in better means and methods almost invariably means more work and more business in the aggregate instead of less.
AZEL AMES, M. D.

Auxiliary Devices for Heating Systems

By JOHN R. ALLEN

Junior Professor of Engineering, University of Michigan, Ann Arbor

A temperature regulator is an automatic device which will open and close the valve of the radiator so as to keep the room at a constant temperature. The temperature regulator in general consists of three parts. *First,* a thermostat which is so constructed that its parts will move with a change of temperature in the surrounding air and the motion of these parts will directly or indirectly open the dampers or valves which control the heat supply. *Second,* there must be some means of transmitting the motion from the parts of the thermostat to the valves or dampers controlling the heat supply. *Third,* some form of mechanism for opening the valves or dampers. In most temperature regulating systems the thermostat merely furnishes power enough to close or open an air valve or electric switch and thus start or stop the operation of the valves or dampers.

The form most used at the present time uses compressed air to operate the valves and dampers. In the Johnson thermostat a small air valve is opened by the expansion of a curved strip composed of two materials having different rates of expansion. The bending of this strip due to change of temperature allows the air to escape and a small diaphragm to move back, thus opening a second valve allowing the air to come from the compressor or source of air supply and close the valve or damper on the radiator. When the room becomes cool the contraction of this strip closes the first small valve forcing out the diaphragm and closing off the compressed air supply to the valve or damper and releasing the air already in the valve or damper. Another form of thermostat extensively used is operated by means of a liquid confined in a thin metal vessel, the liquid having a very high degree of expansion. As the liquid expands or contracts it controls the system of valves controlling the heat supply to the room.

Temperature regulation is a desirable thing in all large heating systems, particularly for public buildings. The systems are quite expensive, but the expense of construction is more than offset by the saving in fuel bills. The saving in fuel bills in most cases is not less than 20 per cent and often as high as 30 per cent. In general the operation of these systems has been entirely satisfactory even after they have been in use some time without any attendance. The control of the temperature of the room should be regulated within 3 degrees. With proper care these systems should control the temperature of the room within 2 degrees. Temperature regulating apparatus is particularly desirable in school rooms; this places the temperature of the room outside the control of the instructor and it is then free from his own personal ideas in the matter, thus adding much to the health and comfort of the occupants of the room.

Air Piping System.

The discharge of air from the air valves and radiators often produces a very disagreeable odor and in addition it is very difficult to obtain an air valve which will not at times discharge a certain amount of steam or water. This difficulty may be overcome by using an air valve so designed that the discharge connection to the valve can be fastened to a piping system. The pipes and air valves are carried to the basement, collected into a larger pipe and discharged to a

sewer or suitable vessel. A system of air piping is very desirable, particularly in large buildings, such as hotels and office buildings, where it saves materially in the attendance necessary to keep the plant in operation. It is also desirable in nice residences where any discharge of water or steam might injure the furnishings. In case it is desirable to install a vacuum system of heating this system could be connected directly to a vacuum pump insuring more rapid circulation in the radiation.

Damper Regulators.

It is always desirable in a steam or hot water heating plant, particularly steam, to install some form of damper regulator on the boiler. In some heating plants it consists of an ordinary rubber diaphragm enclosed in a metal case. The steam is allowed to come in contact with one side of the diaphragm, pushes a lever attached to the other side of the diaphragm. This lever operates a damper controlling the air supply to the fire and sometimes also operates the check valve in the breeching. This is a very desirable arrangement as it reduces the attendance necessary to keep the pressure in the boiler at the point desired.

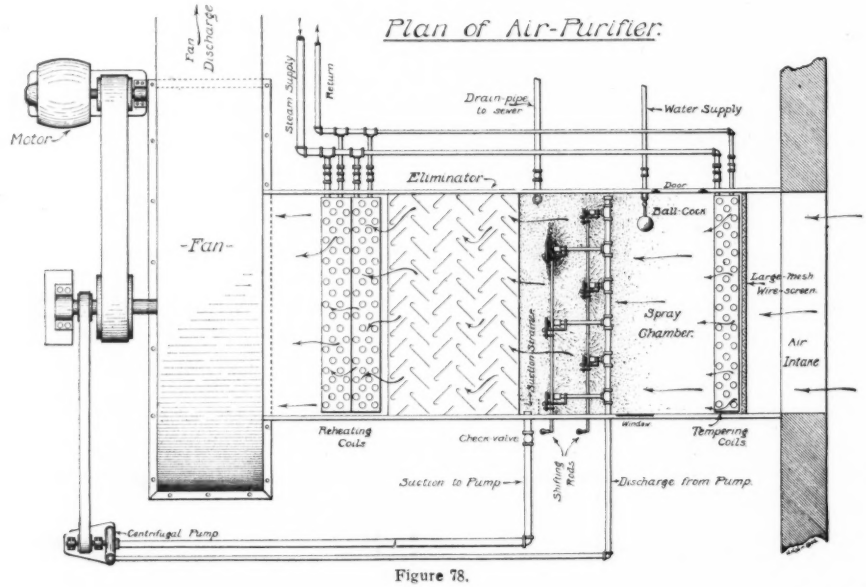

Figure 78.

Humidity Regulation.

The humidity of the atmosphere is a very important consideration in any heating system. When the air is very dry it is necessary for a room to have a much higher temperature in order that it may feel comfortable than when the air is moist. It is, therefore, important that we keep the humidity at a point as high as consistent with satisfactory operation. Cold air contains proportionately less moisture than warm air and therefore when cold air is heated and brought into a building, it should be moistened in order to keep a proper per cent of humidity. The average humidity is about 70 per cent; in the most arid regions humidity is as low as 30 per cent. Humidity as low as 30 per cent produces irritation of the lungs and smarting of the eyes. In cold weather, if the humidity of the outside air is 70 per cent and this air is heated and brought into the room without moistening, its humidity may be reduced as low as 30 or 35 per cent, making the air as dry as in the most arid regions. This produces a serious effect upon the inhabitants and also the furniture of the room. The decrease of humidity due to the action of the heating system occurs particularly in the indirect heating system. There has been placed on the market what is called a humidostat. This is similar to a thermostat except that it is arranged so that as the moisture decreases in the room the humidostat opens up a series of steam or water jets in the air supply so that the air in passing through the steam or water jet takes up moisture. When the moisture gets to a certain percentage, determined by the setting of the humidostat, the apparatus closes off automatically the steam or water jets. Such devices are particularly desirable in connection with school and hospital heating plants.

In the large cities the smoke and dust in the air makes it undesirable to introduce this air directly into the room for ventilating purposes. A great many schemes have been tried to remove the dust from the air. The earliest form was to use burlap screens through which the air passes. These screens work fairly well but the finer dust will always be carried through them. A better plan is to pass the air through a sheet or series of sheets of water. After passing through these sheets of water the air is passed through an apparatus which removes the excess of water. Fig. 78 shows the general arrangement of an air washing system. As you will notice from the figure, the air first passes through a tempering coil which raises the temperature from 60 to 70 degrees, then passes through the sprays or sheets of water, then through the eliminator where the excess of water is removed and then it passes to the heating coils to be heated. The water used for washing the air is circulated over and over again by means of a small centrifugal pump driven by a motor. In some cases it is desirable that the air should be cooled. This may be done by placing cooling coils in the tank where the water collects after having washed the air, and reducing the temperature of this water to the desired point. The washing of the air with water also increases the humidity of the air. In a plant installed by the author the humidity of the air has been kept at a point not lower than 60 per cent by means of the air washer. Air washing devices are very effective in removing dirt; the amount of dirt removed in some cases is very large.

Air Washers.

There is very frequently installed in connection with the heating system what is known as a vacuum heating system. There are two principal forms of vacuum heating systems, one in which the air is drawn from the radiator by means of an air pump through an air valve, as shown in Fig. 76, and the other in which the radiator is fitted with a special form of return valve and vacuum is maintained on the return system by means of a pump or aspirator. The vacuum systems of heating lowers the temperature of the radiator and the radiators do not condense so much steam as they would under full pressure. They do not make any material saving in the amount of coal burned. The principal advantages of the vacuum systems are certainty of circulation and the reduction of pressure in the piping system. They are particularly well adapted for use in connection with exhaust steam heating systems where the reduction of pressure in the heating system lowers the back pressure on the engine, increasing the horse power output of the engine.

Vacuum Systems.

The vacuum system of heating in which the air is drawn from the air valves is particularly desirable in hospitals and school buildings as it does away with the objectionable odor from the air valves. The vacuum system of heating does away very largely with the attendance required by air valves. It also permits of the radiator being placed lower than the level of the boiler and the condensation is raised from the lower level by means of the vacuum in the system. Oftentimes this enables the engineer to overcome serious difficulties in the design of a heating plant. These systems can be profitably installed in old plants where the steam mains are overtaxed, owing to frequent additions to the plant. By additions of the vacuum system these old mains can be made to carry a larger weight of steam, the vacuum system permitting a higher velocity of steam in the system without increasing the back pressure.

The Trap on the Main Drain*

By CHARLES B. BALL, C. E., Chicago

"To become crystalized, fixed in opinion and mode of thought, is to lose the great characteristic of life, by which it is distinguished from inanimate nature; the power of adapting itself to circumstances."—Clifford.

E live in an age of progress. The world never turns backward. Truth will prevail. Though an issue, after a period of discussion and controversy, may lapse from public interest, it can, when again revived, be settled only after serious consideration of the present day evidence which bears upon it. Change of opinion, made after weighing all the new facts in the case, is an attribute of the ablest minds. Opinionated and narrow men refuse to allow new light to illumine their souls and must therefore remain in wilful darkness.

There is an advanced standpoint from which to look at the use of a trap in the main drain, and new evidence is presented both by science and experience which will justify a thorough investigation and reconsideration of the subject.

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*Reprinted from "The Plumbers' Trade Journal," January 1, 1907.

The History of the Main Trap.

The present frequent use of a trap on the main house drain near the front wall of the building and the provisions so commonly found in plumbing regulations which require its installation, date back to about the year 1878, when this appurtenance was prescribed as necessary in the "Twenty Rules for House Plumbing," published as the consensus of opinion of a number of sanitarians, including such prominent ones as Dr. John S. Billings, Henry C. Meyer and Charles F. Wingate.

In view of the pronounced feeling of that period that a real danger existed of the communication of disease from one house to another by the passage of sewer air, and the fact that in very few instances was the plumbing in the house either properly ventilated or gas tight, it was doubtless at that time a wise precaution to prevent the entrance of air from the public sewer into the house pipes.

The Transmission of Disease Germs Through the House Drain.

At the present time we find that the views of those best qualified to judge respecting the dangers which come from sewer air in our homes have been very much modified. We now know that two of the most deadly of the communicable diseases, typhoid fever and tuberculosis, are not communicable through such a channel. "Typhoid fever is due to the ingestion of certain bacilli which have come, through either urine or feces, from a patient suffering from that disease." The tubercle bacillus must come in contact with the mucous membrane of the human body to be a source of danger. When in a moist state it is practically not a cause of infection. It can be positively stated that neither of these germs endangers life or health through entrance by way of the drain pipes into our dwellings.

Respecting the other communicable diseases, there is not yet a complete concurrence of opinion as to whether the germs of certain of them, perhaps diphtheria and scarlet fever, may not possibly be carried through the air, although most authorities agree that there is little if any probability of infection through drain pipes. Many of the most eminent students of the subject would endorse the statement of Dr. Charles V. Chapin, superintendent of health of Providence, who says, "I am sure that the infectious diseases are never transmitted in sewer air." In view of the changed opinion regarding these scientific aspects of the case it is quite proper to again consider in detail the arguments which have so frequently been discussed as to the necessity which now exists for an intercepting main trap.

Arguments for the Installation of the Main Trap.

1. It has been generally assumed that the use of the main trap is necessary to prevent the intrusion of air into the house pipes from the main sewers, because such air may be the conveyor of germs of disease, in case these germs are present in the sewer from some infected source. If disease is not communicated from one house to another by means of open connections to the main sewer the argument falls to the ground.

The studies made in recent years of the characteristics of air found in the main sewers have proved that although slight quantities of the gases arising from decomposition were to be found, such air in well built and copiously ventilated sewers is astonishingly free from disease germs, these organisms being much less frequent than in the street air near the surface.

Experimentation by Hesse and Ficker shows the extreme difficulty with which bacteria pass through even short straight pipes having moistened interior surfaces, and justify the conclusion that specific germs will never be carried by ordinary air currents through more than about twenty-five feet of straight house drains of the usual sizes. If bends are interposed, the distance traveled before the bacteria become attached to the sides of the pipe is much less.

If it were proven that communicable diseases were propagated from germs flowing in sewer air, would it not be best even then to discharge them at the upper end of a properly located soil pipe than at the ground level, perhaps in the middle of a street, or in a footway pavement? In the absence of reasonable proof that any danger at all exists in a direct communication between the house and main sewers, shall we continue to endure the many recognized inconveniences which are inseparable to the running trap? I contend that we should not.

2. One of the most important of the secondary arguments for the use of the trap is the statement that the air from the public sewers passing out at the tops of the stacks will prove objectionable by its odors, especially in cases where a stack in a low building has above it the windows of a higher building.

To this it may be justly replied that the air from the sewers is no more harmful, and probably is even less infectious, than if the air of the house drain only is discharged from these stack terminals.

Whether the trap be used or not, no soil pipe outlet should be so related to openings above it in an adjoining building as to cause nuisance. With

the progress of public opinion in this regard, our laws will ultimately admit the reasonableness of the proposition that the person who creates a nuisance of this kind, either by building a high building above an existing low one, or by constructing a low building next to a standing tall one, will be compelled, as is the case with chimneys in some states, to remove the cause of nuisance by carrying the pipes entirely above the walls of the taller structure. This, however, should be required in all cases, whether the main trap be installed or otherwise.

3. A further argument sometimes used to bolster up the retention of the trap is that the varying pressures of air in the public sewers will cause the seals of the fixture traps to be endangered and allow foul air to escape into the rooms. It constantly occurs that the intrusion of storm water into a main sewer during heavy rains causes compression of the air therein to such a degree that the water seals of main house traps are blown in with considerable violence, but there is no possibility that trap seals will be broken in this way when connected to a main sewer having its ventilation assured through fifty openings in every city block.

4. An erroneous claim has been sometimes made that if the trap is left out, the tendency to clogging at the top of the stack by frost will be increased. The contrary is the case. The constant current of warm air from the main sewer will resist low temperatures at the stack opening much more effectively than the sluggish partial movement which will prevail if a trap is in place. It is well known that an untrapped rain leader (sometimes permissible in sound design) will resist freezing effects in a surprising manner as compared with one trapped at its foot.

5. It is sometimes urged that it is not a part of the duty of the private citizen to assist in ventilating the public sewers through his house plumbing, but that provisions should be otherwise made by the city authorities for the necessary air supply to the sewer mains.

The argument is founded on a misconception of the intimate relations which the officials sustain to private property. The cheapest and most efficient operation of every public utility is advantageous to the interest of every householder. Lack of adequacy in the means heretofore employed to ventilate the street sewers is a demonstrated condition. The trial of any other remedy than the proper one will involve the property owner in increased expense. The application of the only satisfactory method of solution cannot fail to benefit every resident by increased security against the serious dangers from the befouled air contained in tightly closed sewers. The pecuniary advantage to each house owner by the omission of the expensive and troublesome main house trap will be discussed in a later paragraph.

Arguments Against the Installation of the Main Trap.

1. It is a fundamental principle of the disposal of liquid wastes that they should flow with uniform velocity and as rapidly as possible from the fixture in which they are created to the ultimate point of treatment or dilution of the sewage. If house sewage reaches the outfall within twenty-four hours from the time it is discharged from the fixture, little decomposition ensues and no foul gases are generated. The odor of the sewage during this early period is fresh, entirely distinct from the putrid smell which results from advanced decomposition.

The ideal sewage conduit has certain characteristics, as (a) a smooth and impervious service; (b) few and thin joints; (c) good and uniform gradients; (d) straight alignment with easy curves; (e) an adequate, but not excessive, size of pipe; and lastly (f) a means of efficient ventilation. In order to secure these important features much care is taken and heavy expenditures are made in the construction of city sewer systems, and similar care and expense should not be spared in the installation of the drainage lines of the separate buildings.

Assuming that the conditions above specified prevail to a reasonable degree, the introduction of a main trap into the house drain creates at once an anomalous circumstance, because it (a) disturbs the course of the flow of sewage, (b) decreases the velocity of flow, and thus (c) hastens the deposit of suspended matters and eventually is likely to (d) cause obstruction in the pipe. All these effects are directly opposed to the other costly provisions made for the prompt carrying away of the liquid refuse.

A recent statement by Mr. J. W. Hughes, of Montreal, a well known practical authority, forcibly expresses this. He says: "Omit the intercepting trap; there must be no interception of sewage. Once it leaves the fixture the quicker it reaches the end of its journey (the main sewer) the better. The basic principle of the water carriage system which we use is the rapid removal of solid and liquid sewage matter from the premises by means of an adequate amount of water, and any checking of this is deviating from the object desired to be attained."

2. The second argument is that the main trap, for the purposes of its water seal, retains in the house system foul wastes which would otherwise go at once to and through the public sewer. If the main trap is not an absolute and unquestioned necessity it is a great mistake to hold this sealing liquid in the pipes subject to decomposition when it might otherwise flow promptly away. This principle is, of course, applicable as well to every spoonful of waste water retained in any trap above that which is essential to afford protection against the outward passage of the drain air. It is fervently to be hoped that in the future some sufficient means will be discovered to decrease the amount of sealing water now held in all the fixture traps, but which we are not yet able to do without.

3. The trap in its operation also retains solids, which, as every plumber knows, cause more frequent stoppages than happen in any other point of the plumbing system, resulting in much unnecessary inconvenience and expense to house owners. These solids are, in general, of such a nature that they would occasion little or no trouble if carried by an unretarded stream into the main sewers.

4. The construction in the house drain of such a barrier as the main trap, renders it impossible to thoroughly ventilate the public sewer system. It is well known that notwithstanding the trial of many types of apparatus for this purpose no efficient one has been found, and it is safe to predict that none will be found which at all approaches in simplicity and adequacy the method proposed of allowing each building to do its part in relieving the public sewer of air pressures. It is immaterial whether the air movement in any given case is upward or downward in the vent stack, the effect in diluting the foul air contained in the house pipes will be the same.

5. The placing of a main trap renders it necessary also to provide an otherwise useless and objectionable appurtenance, the air inlet, for the ostensible purpose of admitting air into the piping system.

Every observer knows that many fresh air inlets of every city where they are supposed to be in use are ineffective. As a well known writer has said, "How long does the grating remain unobstructed and allow fresh air to pass into the pipe? When it is clogged with dirt of what use is the fresh air pipe, and why is it put in at all if it cannot be made of actual value?"

The proportion of those which are out of service under ordinary conditions is estimated by certain plumbers as more than one-half, and in times of heavy snow falls, when the necessity for a circulation of air in the house pipes is greatest, every opening in a particular locality may be rendered inefficacious by a snow covering.

The fact is not fully realized that if the inlet becomes obstructed, an air locked condition may prevail in the pipes between the fixture trap and the main trap. The compression of the contained air and the collection of gases at any point of a plumbing system, of course, should be avoided.

The troubles of the architect and plumber begin when, in installing a house drain, they undertake to discover a suitable location for the air inlet. If placed at the curb, it constitutes an obstacle and a nuisance, and becomes a receptacle for street and sidewalk rubbish. Even in cases where wide parking spaces are available it is rare to find a satisfactory place for this trouble maker.

Again, the fresh-air inlet has so often been the source from which bad odors arise when the current of air within the drain is reversed by the sudden discharge of a large fixture in the house, that it has received the unenviable, but well deserved, name of a foul-air outlet.

I do not believe that any adequate means can be found to remedy this result, as the mechanical contrivances having this end in view usually fail to operate automatically, or present a more or less permanent obstacle to the inward passage of the air currents.

The expedient of running the air inlet to some point near the top of the house has been tried. If the pipe is placed within the house, it has practically the same temperature as the vent stacks, so that no air circulation takes place. If placed on the outside of the house it is objectionable by reason of its unsightliness.

6. An argument against the use of the main trap which cannot be gainsaid is that it cuts off a certain portion of the house drain from the benefits of air circulation. That part of the sewer line between the main trap and the street sewer has no ventilation excepting such as may be caused by the passage of a stream of sewage, which issuing from the main trap with a low velocity, never adequately scours the house line or causes a displacement of the stagnant gases which have collected in it. It thus results that this portion of the drain is rarely well flushed with water and is never well aired. The experience of all those who have had occasion to examine house drains between the trap and the main sewer is conclusive on this point.

EXPERIENCE ARGUES AGAINST THE TRAP.

A number of towns and cities have had experience of some years without the use of this appliance. In Corning, N. Y., where exists a separate system of sewers, constructed in 1887 with automatic flush tanks and ventilated manholes, no house trap has been required. It was stated in 1896, "This plan works to perfection here." A recent letter from the Master Plumbers who install most of the work in Corning, corroborates the statement made ten years since.

In Newton, Mass., since 1894 a like opinion has prevailed. The inspector of plumbing says: "Most of our drains are connected without the running trap and there has not been a single complaint. We advocate omitting the trap wherever the plumbing is O. K." The practice of Newton is so convincing that a number of neighboring cities have adopted the same requirements.

On June 4, 1894, the plumbing regulations of Montreal, Canada, took effect. A recent letter from J. E. Dore, the city sanitary engineer, says: "There are very few intercepting traps in our drainage system. Sewers are ventilated by manholes acting as inlets and plugs and stacks through the roofs as outlets. In my humble opinion, that mode of ventilation for sewers is the best."

The experience of the city of Chicago is in point. Mr. Andrew Young, for many years chief sanitary inspector, was an early and strenuous advocate of the main trap, believing that it was an absolute necessity. After some years of observation of its operation his approval weakened and finally he became convinced that it should be left out. It has therefore not been required in Chicago for at least ten years. The present occupant of the position, Perry L. Hedrick, C. E., framed the section (1650) of the Municipal Code of 1905, which prohibits the placing of any trap upon the house sewer or house drain. He says: "The argument of the main drain trap advocate has been analyzed and found faulty, and therefore if we follow our reason the trap upon the house sewer is a useless nuisance."

Up to date testimony comes from Mr. Alfred Gawthrop, the well known plumber of Wilmington, Del., in the words: "Our experience leads us to favor the thorough ventilation of the drain and waste pipes, and to do this it is necessary to do away with the house trap at the curb," etc. This "has been prohibited in this city for several years with good results."

HOPEFULNESS IN THE SITUATION.

It is significant that Mr. John Eisenmann, building code commissioner of the city of Cleveland, determined after a prolonged investigation of the merits and demerits of the main trap, that its use was unwise, and accordingly provided that it should not be installed under the new code, which will take effect early in 1907. In Cleveland the disadvantages of the main trap have been increasingly manifest to those plumbers who closely observed its operation, and there are few of them who object to the new requirement.

The general trend of opinion is shown in the statement made by Mr. William Jacobus, of Newark, N. J., at the last meeting of the Master Plumbers' Association of his state. He says: "The use of the intercepting filth retaining trap on the main drain as demanded by the plumbing ordinances of today, is a flagrant violation of good plumbing practice, and inimical to the preservation of health in general, as is proved by the absence of retarded filth and the clean, flushed or scoured seals of the drainage system where main traps are not in use."

Mr. F. W. Tower, the well known plumbing inspector of Springfield, Mass., argues against the use of a main trap as an appliance which tends to accelerate the syphonage of traps located in the lower stories of a building, asserting that syphonic action is very much lessened if it is not used.

Dr. Azel Ames advocates the disuse of the trap in these words: "This (the omission of the main trap) is the advanced gospel of common sense, born of experience. The old-fashioned 'running trap' in a house drain, close up to the house, was 'the abomination of desolation' spoken of by Daniel, the prophet. It plugged, it froze, it stunk, it syphoned, it was an indictable nuisance and a constant menace. Yet it is required today by the ordinances of many cities and towns and is a travesty upon scientific fact and advance."

Let us hope that the question of the use or nonuse of this appliance may be discussed so candidly, in view of the present clear light upon the subject, that a sound and indisputable conclusion may be reached. It should at least be made impossible for a well informed plumber to say, as was said a few months since in a state convention, "Every plumbing ordinance * * * and every plumbing inspector require a running trap in the main line between the house and the public sewer." Those who feel that a main drain trap should never be required may well take courage from the recruits who have come into their ranks in the last few years and believe that the human mind is still subject to a change of conviction if new evidence is properly presented to it.

Spectacular Sights for Southerners

By Elmer Crawford.

Tampa Bay Hotel, Fla., Jan. 20.—There is one pre-eminent feature of southern life, outside of earthly cares, that is worth more than passing mention. At this season of the year the people of Florida and the extreme South, as well as the thousands of persons from the North who are fortunate enough to be able to pass the winter in the land of flowers, are able to view the most marvelous and awe-inspiring spectacle ever allotted to the vision of man. There is probably not a reader of these lines who has not at some time gazed at the moon, shedding a steady and benign light upon this earth to cheer mankind, and asked the question as to its habitability or thought of its beautiful light, size and distance from us. I shall pass this question with the statement that it has no inhabitants, no life of any kind, in fact no requisites to sustain life as we know it upon this earth. I may also say that the purpose of this article forbids the discussion at length of the probability or improbability of the planets belonging to our universe being inhabited as measured by the human standard on this earth or of animal and vegetable life existing on them, that might correspond to any of the numerous ages of development of this earth from the Silurian period, which marks the dawn of life on our planet, to the present time.

We know that we are being whirled around our sun at the rate of 18½ miles in a second of time and at the same time our sun, this earth and all the planets of our universe, together with their satellites and the asteroids and comets controlled by our major planets, are moving at the rate of 12½ miles a second toward the great sun Vega of the constellation Lyra and the 6,000 famous suns of the constellation Hercules. Without indulging in technicalities to any great extent I will say that the parallax of Vega is 0."140, which indicates that light traveling at the rate of 186,000 miles a second has been 23 years reaching our eyes from this mighty sun, whose dimensions are over 1,000 times that of our sun, which is 1,250,000 times as large as our earth. Here is an opportunity for some of our young mathematicians to figure out exactly when we shall be flooded with the light of that mighty sun, whose brilliance will make the dying rays of our own luminary look like a flickering candle in comparison.

Again, if you will examine the accompanying map carefully and note the position of Jupiter, the largest planet of our system, you will readily be able to pick him out from the fixed suns which twinkle while he casts a steady, brilliant light, which he receives from our sun and sends back to us as a token of his friendship. He is more than 1,200 times as large as our earth and 482,786,000 miles distant from the sun. If our young mathematician will conceive of a string being fastened along the equator of our earth the rotation of the latter would wind up 25,000 miles of it daily and in about 20,000 days enough string would be wound up to reach from this earth to Jupiter. It would take, however, 2,500,000 years for the earth to wind up enough string to reach to the nearest star, Alpha Centauri, whose parallax is 0."916, showing that it takes three years and six months for its light to reach us. Now, the light from our sun reaches us in a trifle over eight minutes, having traveled 93,000,000 miles, which shows at a glance the enormous distance from us even of the nearest star. Polaris (Pole Star) in the handle of the little dipper, which is easily found by drawing a line and continuing it through the "pointer stars" of Ursa Major, has a parallax of 0."073, which indicates that the light of that distant second magnitude star has been on a journey extending over a period of 45 years to reach your eye.

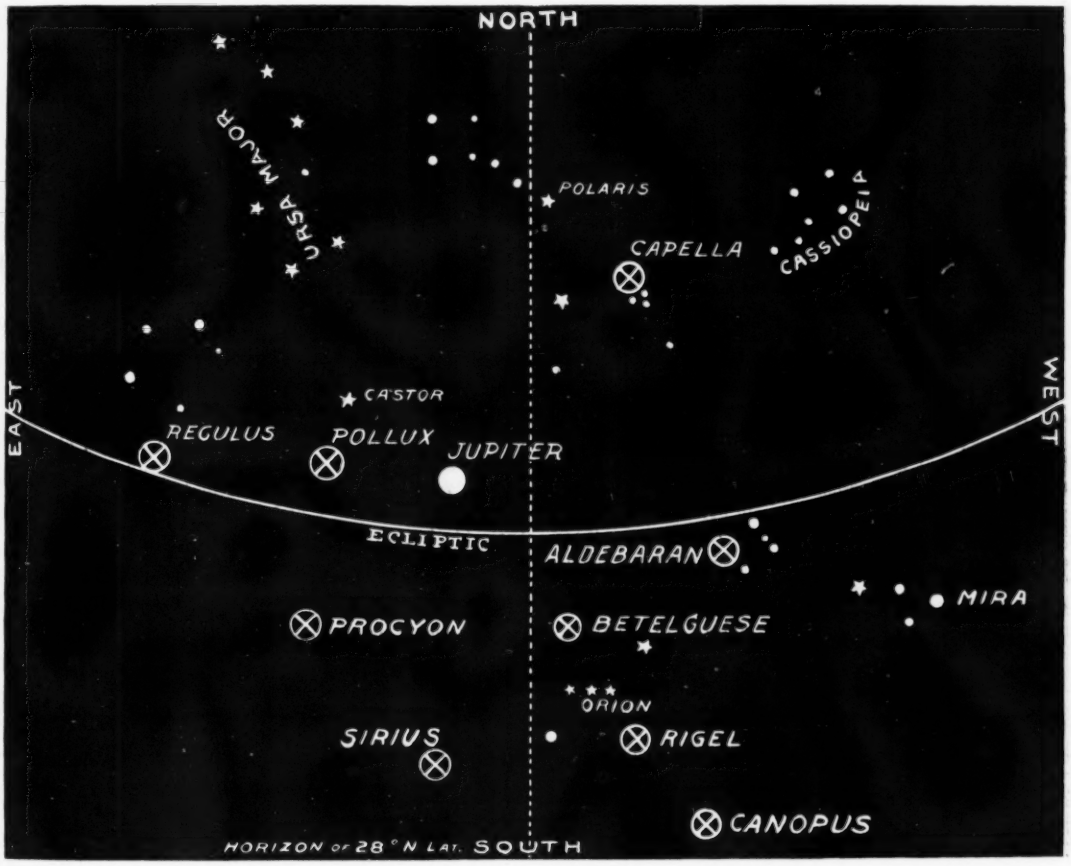
If you will have the patience to wait for Halley's comet, which will surely appear on time after a flight of 76 years and 4 months since his last extraordinary appearance in 1835 (Perihelion passage, November 15, 1835), my readers will view this magnificent "Messenger of the Gods" speeding toward the sun in all the glory of his flight. Thanks to the advanced civilization of the twentieth century, his appearance will not cause the consternation it did during the history-making epoch of continental Europe. In the reign of Louis le Débonnaire of France, 837, at the appearance of this comet he and his court gave themselves up to prayer and fasting and built monasteries and churches to ward off the evil omen supposed to follow in the wake of this messenger of the skies. He died three years later and the historians of the time then pronounced this wanderer "a harbinger of death." This same comet appeared in April, 1066, just at the time of William the Conqueror's invasion of England, and consequently was supposed to have showered a baleful influence on the battle of Hastings, which delivered that country over to the Normans. A contemporary poet referring to the crowning of William said "that the comet had been more favorable to William than nature had to Caesar; the latter had no hair, but William had received some from the comet." During the memorable and devastating war of the Turks and Christians, 1455, when the entire East and West were armed from head to foot against each other, His Holiness Pope Calixtus III, having put aside the sinister effects of this remarkable disturber of the destinies of mankind, is supposed to have turned the fortunes of war in favor of the Christians when Mahomet II took Constantinople by storm and raised the seige of Belgrade. These ordinances of His Holiness Calixtus III, in reference to the comet, fix the date of the Angelus to the sound of bells. Whether Halley's comet has lost enough hydrogen and hydrocarbons to dim his lustre through his numerous perihelia, or whether he has lost a material portion of his 32,000,000 miles of tail, remain to be seen, and I am sure you will all watch with unabating interest his lonely journey through space blighted by the frosts of ether 230 degrees below zero.

I especially desire to call the attention of our Southern friends to the marvelous spectacle of stellar activity that to them presents phases of grandeur not permissible to those living in the North. On account of their geographical position they are allowed to absorb and dilate upon, to a certain extent, the beautiful gems of night that guard the approach to the south pole. While the people of the northern states may view at this season of the year a magnificent display of heavenly jewels it remains for those of the South to behold, and to feast their eyes upon, the same transcendental spectacle, to which may be added one more lustrous behemoth of the skies that augments a hundredfold the amazement of those who are wont to gaze with rapture upon the boundless works of the Creator.

This is the season of the year when the starry heavens are most gorgeous. Tonight (January 20) at 10 o'clock

that grand, most awe-inspiring and spectacular constellation, Orion, with its quadrilateral grasp upon the heavens south of me, and its magnificent suns, Betelguese and Rigel, adding majesty to its triumphal march, opens the door for most serious thought. Betelguese, the orange colored sun in the upper corner of this quadrilateral, is 1,000 times as large as our sun. Rigel, its companion, in the lower corner, is not only several thousand times as large as our sun, but also so distant as to be beyond computation. The immensity of this sun may be estimated, in a measure, when we consider that our sun is 1,250,000 times as large as our earth. The light we now behold left the great Rigel before any of us were born, as we are able to compute the light of stars up to and past three score of years, but that of this sun, immense though he is, appears to be beyond the conception of the human mind. While you are absorbing the beauties outlined in this magnificent gem of the skies remember that the astronomer, with his eye magnified 40,000 times with the aid of a great telescope, is able to discern visions in this constellation almost beyond the pen of man to describe. The Great Nebula of Orion is so vast that if five million solid wheels, as large as the immense orbit of Jupiter, were placed in front of it we should still be able to clearly see portions of this enigma of the skies. In the words of a most learned scientist, "we can learn something of the celestial pebbles that lie around us, but the great ocean is beyond. The **finite** cannot grasp the **infinite**, nor can the **ephemeron** comprehend the **eternal**."

Southeast of Orion will be seen the famous Sirius, the brightest star in the heavens. In the vista of ages that now live only in history he was the guardian of the early dwellers along the Nile. When Egypt was the center of civilization the great dog Sirius, as he was termed, arose on the 20th of June and announced the overflow of the Nile. Since those ancient days "the precession of the equinoxes" has deprived Sirius of his usefulness in this regard. In the writings of Sophocles during the later portion of his life, when Athens had established her true empire under Pericles, and he had wrested the tragic prize from the father of the Greek tragedy, Aeschylus, and consequently had become famous in the then known world of letters, I find him hurling epithets at Sirius because of his malignant influence. This was in 468 B. C., or over 2,000 years later. All this is changed. We now behold him, the brightest sun of



Sketch of the position of the principal features of the heavens as seen at 10 o'clock evening of Jan. 20th, Tampa, Fla., 28 degrees northern latitude, by Elmer Crawford.

the winter's night, sending us poor mortals a flood of light every ray of which has traveled over eight years to reach our eyes, at the brain racking speed of 186,000 miles a second. One can get a fair estimate of his distance from us by comparing it with our sun, whose light reaches us in about eight minutes.

Sirius and Rigel may be termed bluish white suns with a dense and hot atmosphere of hydrogen of 20,000 degrees F., and differ from our yellowish sun, whose atmosphere is shallower and only about 12,000 degrees F. The great sun Capella, of the constellation Auriga, directly north of Orion, and of Procyon of Canis Minor, east of Betelguese, and Pollux of Gemini, north of Procyon, are similar to our sun, with metallic gases in their chromospheres which absorb a considerable portion of their light. The orange-red suns Betelguese of Orion; Aldebarau of Taurus to the northwest and the variable star Mira, directly west, have a complex atmosphere, dense, of low temperature and saturated with chemical compounds. No hydrogen is ascertainable in any of these orange-red suns except when they are at their maximum brilliancy.

Still further south and seemingly reserved for the edification of our southern friends, Canopus, next to Sirius the most brilliant orb of night, casts his effulgent rays over the southern hemisphere and stands like the monarch he is guarding the secrets of the south pole. Unfortunately our friends of the north will be compelled to forsake the chill blasts of their winter season and bask in the orange-laden breezes of the extreme south if they wish to view the splendor this mighty sun casts over the southern sky. Although not quite as bright as Sirius, yet he is several thousand times larger and at such an inconceivable distance from us that the mind of man cannot grasp the details which would give comprehension and significance to his majestic sway. However, those who are fortunate enough to be able to enjoy the balmy breezes of Florida in the winter will readily recognize the magnificent part played by Canopus as he sheds his lustrous rays to aid the grand galaxy of heavenly monarchs uphold the dignity of celestial power.

One of the most picturesque sights to those who are accustomed to watch the movements of the stars lies directly west of the constellation Orion and is just now receding from view. It is the famous variable star Mira, which has a period of about eleven months, and for a few days is as bright as a star of the second magnitude. The violent physical and chemical reactions taking place on this dying sun will recall to the minds of those who have studied geology and paleontology the marvelous reactions and chaotic conditions existing on this earth, as it was emerging from its gaseous state and just before the earliest forms of life appeared. Such are the conditions now confronting Mira. It is in the last stage of a dying sun and has not yet reached the critical period when it can be regarded as a planet. It reminds me of the enormous spasmodic efforts of our Sun, once in eleven years, which visibly affect our earth, and will, when it reaches the stage when chemical compounds are formed upon its surface, pass the way of poor Mira and of the millions of "sun-derelicts" which are scattered through boundless space, waiting for a collision to resurrect and start anew their desolate masses.

There is one more beautiful gem that shines with a brightness and evenness most attractive and will probably arrest the attention of both the Southerner and Northerner at this season of the year more quickly than any particular body in the heavens. It is Jupiter, the largest planet of our system, directly north of Sirius and also directly in the path of a line drawn through Betelguese and Rigel of the constellation Orion. He is in the zodiacal constellation Gemini. He receives his light from the Sun the same as we do, only less of it, because of his distance from that central body. He is nearly 475,000,000 miles from the Sun, and consequently receives less light as well as heat. Yet what he lacks in these essentials he readily makes up because of his size (about 1,200 times that of the Earth, making him larger than all the other planets combined) and internal condition. This mighty monarch of our system is still partially luminous. While he has passed the fire-mist state of planetary development and consequently is not as luminous as formerly, yet he presents the same transitional phases as marked the early development of this earth preceding and during the age of incrustation. His light consequently will diminish in years to come when full incrustation has been consummated and the molten interior will then seek an egress through the means of volcanic action.

At the present time we have our Vesuvius and Pelee at intervals belching forth gases and lava from the interior of our Earth. If we examine the Moon through a powerful telescope we see the remnants of what was once the seat of terrific igneous action on the great crater Theophilus, whose diameter is sixty-four miles and whose ramparts are 18,000 feet in height, situated in the southwestern quarter of that body and not far distant from Humboldt, 16,000 feet high. But these are now absolutely extinct and will never again send forth their blazing streams.

The time will come, however, when Jupiter will experience the same development and the heated gases and molten interior will find egress into the outer atmosphere of that planet as was the case with our Moon and as is now the occasional happening on our Earth. Yes, myriads of centuries hence, when this enormous planet shall have cooled sufficiently, and shall have passed through the clarifying period of planetary history, he may be the habitation of a race of beings akin to the human standard. But they will differ materially from those we know. When that time comes our Sun may be so thoroughly degenerated as to be unable to give light and heat sufficient to sustain life of a high order of intelligence on this immense and beautiful planet. If such be the case this beautiful orb of night will pass on in its transitional period without being subjected to the scrutinizing investigations of man on his enormous surface. He will join the great army of dead planets manless and womanless and may not be the worse for this accidental slip in the destiny of worlds.

The voiceless and grandiose features of lunar solitudes awaken in us conceptions of eternal degeneration. Its pinnacled mountains and yawning pits bid us behold how the mighty forces of Nature will in time even dethrone worlds. The steady rays of sunlight fall listlessly upon a vast and weird cemetery where no bird of song sings a joyous welcome; where no trees or flowers shed their fragrance and no sign of activity greets the rising Sun.

This is the land of death. What has happened to the Moon will also surely mark the onward step of all our planets. The time is coming when our beautiful-ringed planet Saturn will be divested of his gorgeous trimmings; Uranus, with his spectacular moons, will cease to excite wonderment upon this Earth, and Neptune, now receiving 900 times less light from our Sun than we do, will wander aimlessly on in his orbit cheered only by the "death march" of the spheres.

Thirteenth Annual Meeting of the American Society of Heating and Ventilating Engineers

New York, N. Y., January 24.—(Special.)—The thirteenth annual convention of the American Society of Heating and Ventilating Engineers was held in the new Engineering Building, in this city, on Tuesday, Wednesday and Thursday, January 22-24. The opening session was called to order at 2:30 Tuesday afternoon by President John Gormly. Secretary W. M. Mackay then read the following names of members elected since last meeting.

Members.

John R. Allen, University of Michigan, Ann Arbor, Mich.

Albert Aschaffenburg, 821 Baronne street, New Orleans, La.

Arthur H. Barker, Wooderoft, Trowbridge, Wilts, England.

Frank H. Chilsholm, 491 East Sixty-second street, Chicago, Ill.

George H. Crawford, White Plains, N. Y.

Edward D. Densmore, 15 Exchange street, Boston, Mass.

J. Prator Dugger, 167 East Lake street, Chicago, Ill.

George M. Getschow, 184 Indiana street, Chicago, Ill.

Edward B. Gordon, Jr., 42 West Jackson Boulevard, Chicago, Ill.

William C. Green, 141 Ingalls Building, Cincinnati, O.

Fred K. Houston, Rockford, Ill.

Frank N. Jewett, 1625 Marquette Building, Chicago, Ill.

George H. Kirk, 6612 Wentworth avenue, Chicago, Ill.

John H. Kitchen, 901 Broadway, Kansas City, Mo.

Foster W. Lamb, 259 East Kinzie street, Chicago, Ill.

Edwin A. May, 282 Michigan avenue, Chicago, Ill.

Charles D. McArthur, 601 West 182d street, New York.

Charles F. Newport, 6312 Wentworth avenue, Chicago, Ill.

Edward J. Ryan, Danville, Ill.

John J. Spear, 58 West Randolph street, Chicago, Ill.

Thomas Tait, P. O. Box 229, Omaha, Neb.

Alvin W. Varney, 355 Campbell avenue, Detroit, Mich.

Theo. Weinshank, Newton Claypool Building, Indianapolis, Ind.

Harvey R. Willard, Security Building, Chicago, Ill.

William C. Wolf, Elkhart, Ind.

Associate Members.

James H. Martin, Jr., 427 Jackson Boulevard, Chicago, Ill.

Lloyd G. McCrum, 46 East Twentieth street, New York.

Mark E. Monash, 90 Centre street, New York.

William M. Scudder, 40 Dearborn street, Chicago, Ill.

Junior Members.

Norman A. Hill, 1718 Land Title Building, Philadelphia, Pa.

Harry J. Ott, 194 North State street, Chicago, Ill.

Alf. Tjersland, 41 Dearborn street, Chicago, Ill.

The roll was then called by the secretary, after which President Gormly addressed the society as follows:

President Gormly's Address.

Gentlemen—In the name of the American Society of Heating and Ventilating Engineers, I extend to you all a most hearty welcome to this our thirteenth annual meeting. I trust you will take part freely in our deliberations, because an interchange of opinions and experience is beneficial to all. Aristotle says, "Were it not for an interchange of good fellowship and acts of mutual kindness, society could not exist." This truth applies as well to our society as to society in general. Let us endeavor to mutually benefit each other during our deliberations, bearing in mind the admonition of Epictetus that but a limited time is given to each of us to do all the good he will do in this world, and we should do it while we have the opportunity, or, as he puts it, "There is a boundless abyss of the past; there is a boundless abyss of the future; our period is but a point of time as compared with the countless past and the immeasurable future." This being indisputable, we would fail in our duty to ourselves as well as in our duty to our fellow men were we to neglect this opportunity that appears for our mutual advantage. To many of us such an opportunity may never return.

We are quick to adapt to our material advancement the scientific knowledge transmitted to us by others; but we do not originate scientific investigation to the extent that we should. We have thought out more efficient means of applying to commercial use the facts which true scientists have handed down to us. But where would our advancement be today were our ancestors as unscientific and commercial in their time as we are in ours? The pleasures of true scientific research are totally unknown to many of us. We take the shining piece of gold which close application to drudgery justifies us in accepting; but we do not know, nor do we care how it is produced in nature, nor by what chemical formula it is extracted from the rock in which nature placed it. In a matter of fact way, we are like the ox which enjoys the corn, but cares not how it is germinated, cultivated or harvested.

We aspire to be called a practical people, yet we spend millions to attain a theoretical north pole, which, were it attained, would be utterly useless. At the same time we neglect to extract from nature the heating elements which it contains, which it not only contains but manifests to us, and which, if utilized, would not only warm us but would drive all our power machines to the end of time. If we hold our faces in the future to the commercial grindstone as we have done in the past we will never attain that scientific perfection in heating and ventilation which will abolish the hot air furnace, the steam and water heaters, the radiators, the ashes, the smoke and the wasted energy of our present cumbrous and expensive systems. The art of heating is in its infancy. It will stay there forever, unless we tear ourselves from the rut into which we have fallen.

Let us investigate how the sun maintains its heat for millions of years undiminished, in intensity, and let us place smaller suns in every room to radiate heat as our sun does—directly, without cumbrous appliances, without pipes, valves, heaters; which, scientifically speaking, are but little advanced from barbarism. Were we scientific to the extent that we are commercial, we would be drawing from nature's inexhaustible source of heat directly as the sun does. A perpetual and inexhaustible supply of heat, drawn directly from the elements of nature, is not an impossibility, nor is the attainment of such perpetual heating so far from us if we will make an earnest effort to secure it. We must think, investigate and attain. It is a burning disgrace that our heating methods are so crude, so unscientific. We act as though we entirely neglect our intellectual nature to cater to our material nature.

We are just on the borderland of scientific heating. We know, from the investigations of our ancestors, that water is composed in great part of oxygen, a very inflammable substance, supplied in unlimited quantities by nature, yet we use water, not as a source of heat, but to transmit heat, much as we would use a freight car. It should be a source of heat and would be were we scientists. Wonderful progress has been made in the study of electricity and magnetism. This should be an incentive to us. Will our future heating engineers utilize the electric powers of nature, which are so saturated with fire that they paint the heavens from the horizon to the zenith with the fiery flames of the aurora and appeal to all scientific engineers for investigation and utilization? Will we not in future mitigate the rigors of our winter by at least utilizing the millions of units of the sun's heat which so oppress us in summer? Those of us who envy the rich may become richer than all others if we will perfect a modern system of heating which will extract its caloric from the fields of nature so prolific of possibilities. We should supply heat much as the arc light supplies illumination.

Astronomers tell us that the sun as seen through whirlpools of its own vapor is not heated even to redness. That it is a dark body. We must infer from this that the rays which it darts into space are heated by the effect of our atmosphere upon them, which transforms them into heat rays as they travel towards us. Could we but discover the generating formula of the sun's heat we would be far on the road to successful scientific heating. The time cannot be far distant when the forces of nature will be so understood and utilized that heat rays will be as dirigible as electric forces now are in the transmission of wireless telegrams. We utterly fail in our duty when we devote our energies to the commercial feature of heat transmission to the entire neglect of scientific investigation. One hour each day devoted sacredly to scientific investigation by each member of our society would hardly bankrupt us and would make us rich intellectually.

The electric engineer and the chemist are forging ahead and will overlap our field of duty if we neglect it. See and admire the giant strides the electric engineer has made. Note well how the chemist now extracts in one-half hour all the gold and silver contained in the most refractory ores, yet one year ago it took ninety days to extract 80 per cent of its value. Other branches of science are advancing. We must advance or we must recede; there is no intermediate position. The time is ripe to relegate to ancient history the hot-air furnace, the steam heater, the water heater, with all their cumbrous appendages, which at best utilize but a fraction of the heat units they should transmit. We are part of a progressive age. Let us think more and struggle to attain a higher plane which is ours if we but make the effort. The forces of nature which we could utilize almost overwhelm us. The outlines of continents are changed by volcanic action. The active power of volcanoes is uncontrolled heat. Each summer storm fills our atmosphere with sheets and bolts of fire, yet we look on as a horse or an ox might do, without an effort to harness these forces. We are for months so oppressed with excessive summer heat that we flee to the mountains for relief, yet we make no motion to utilize this excessive summer heat that we may mitigate the rigors of the winter which is sure to follow. If the excess of heat were stored as electricity is stored we might laugh the wintry blizzards to scorn. Do any of you imagine it is beyond the possibilities to store it and to liberate it as needed? We are as infants in our chosen profession. We will be the joke of future generations for coming so near perfection in heating without attaining it. Another matter calls loudly for our very serious attention. If you will read the history of our society in its incipiency you will see in our printed proceedings that when we had but seventy-five members we had an abundance of good papers presented for discussion. You will also note that with four times that membership we now have no more papers than were first presented. What must we infer from this? Either that our present members are four times as indolent, or that they are four times as incompetent, or that they have but one-fourth the interest of the first members. This condition of affairs is so radically wrong that its cause should be discovered and eradicated.

You will also note that the principal papers presented year after year are by the same heroes who contribute freely of their time and talent. These men are worthy of much greater consideration than they have ever received. I would suggest that in all future lists of the names of our members those who have presented a paper which has been accepted by our society shall be printed in small capitals and those who have not so distinguished themselves shall be printed in small letters. Such a distinction may spur those on who never do anything; those who absorb information but give nothing. It will then be seen at a glance who are workers and who are not. It can work no injustice, for all members will receive just what they deserve. If they desire to be on the roll of honor they have but to present one acceptable paper. The most onerous task connected with office in this society is to secure from members a few papers twice a year to be read. Members should vie with each other to crowd the society with papers. One would suppose, from the answers returned when members are asked to contribute a paper on a subject that they have made a special study, that no member has time to eat more than one hurried meal a day. The facts are that no member is so pursued by the furies of financial disaster that the few hours needed in twelve months to prepare a paper would reduce him to bankruptcy. It is not the lack of

ability. It is not the need of time. It is absolute indifference—or, worse, a desire to secure professional information and to give none in return. It is discreditable from any point of view. With a desire to remedy the evil I thus draw attention to it and suggest a remedy. Is it not plain that if all our members were to act in this selfish manner we could not exist as a society? It is vital to our success that a majority of members be active and efficient. If our members will but chart and tabulate the results they have attained with various systems of heating, noting the failures as freely as they note the successes, with the bravery displayed by the surgical profession in publishing their failures as freely as they publish their successes in the surgical journals, our proceedings would then be of incalculable benefit to their possessors. At present we have but little of such information between the covers. What a showing we could present if each member were to chart from one to five such plants, regardless of the success or failure. Have you the nerve to do it? Our charter states that we are associated for the promotion of the arts and sciences and for the interchange of knowledge. Every honest means toward that end should be encouraged. The thought has been advanced that we might establish a form of exchange by which we would give copies of our proceedings to members of kindred engineering societies and receive from them an equal number of copies of their printed proceedings for distribution among our members who desire to secure them. A very small advance above the cost to print and mail such publications might be charged. This charge should be paid by the member receiving such publication. The amount of money to be invested by anyone would be slight. If a small addition to the actual cost were charged it would be a source of revenue to the society. When the forms are ready to print the extra cost of printing and mailing a few hundred additional copies would be but little. It is likely many of our members would gladly pay this cost to secure the proceedings of other kindred societies, and they would have many members who would be pleased to receive ours for a small fee.

I congratulate you on the fact that this society has prospered wonderfully during the past year. This you will learn in detail from the reports of the treasurer and the secretary

Secretary Mackay's Report.

The secretary then rendered the following report:

Gentlemen: Your secretary would report an increase in membership during the past year.

At the last annual meeting our membership was composed of 1 honorary member, 217 members, 17 associates and 8 juniors, or a total of 243 members of all grades.

During the year we have added 37 members, 6 associates and 5 juniors, 1 associate was advanced to full membership, 2 members resigned, 1 junior failed to qualify, 5 members, 2 associates and 1 junior were dropped from the roll for non-payment of dues, and 1 member, Mr. Herbert W. Nowell, who was elected to membership June 25, 1904, died on March 25, 1906.

Our present membership is 1 honorary member, 247 members, 20 associates and 11 juniors, or a total of 279 members of all grades, making a net increase of 36 during the past year.

The financial affairs of the society are in good condition. At the last annual meeting there was a balance in the hands of the Treasurer of $633.94. We have received from all sources during the past year $3,710.62, which, with the balance on hand, made a total of $4,344.56 available.

The total expenditures amounted to $2,549.66, leaving a balance in the hands of the Treasurer of $1,794.90. There is a balance owing from members for dues, etc., and from newly elected candidates for membership for initiation fees and dues amounting to $561.25; this, with the balance on hand, amounts to $2,356.15.

The members dropped from the roll during the year owed the society $240.

The 1905 proceedings, which were delayed for a number of reasons, have been completed and will be forwarded to the members at once.

The 1906 proceedings are well under way and will be printed as soon as the corrected discussion is returned by the members. The total cost of these two years' proceedings will be about $1,925. We have no unpaid bills on hand.

The Secretary's expenses for the year, including stenographer, clerk hire, rent of postoffice box, certificates, pin badges, expenses in connection with the summer meeting, postage, expressage, etc., amounted to $905.82.

The society held a summer meeting at Chicago July 19 and 20, 1906, which was the largest and most successful meeting it has ever held.

The papers for this meeting were late in being received. There was a delay in having the cuts prepared. The papers were received from the printer Monday afternoon and were immediately mailed to the members. Two papers will be read from manuscript.

The delay in receiving the papers prevents the possibility of the members obtaining a knowledge of them, and consequently prevents a full and intelligent discussion of them, thus lessening their value, and I would urge on the members the desirability of sending in their papers earlier.

The report of U. G. Scollay, treasurer, showed the organization to be in good condition financially.

Received for dues and from sale of books	$4,344.56
Disbursed	2,549.56
Balance on hand	$1,794.90

The report was accepted and put on file.

The report of the Board of Governors showed a substantial increase in membership.

Reports of Committees.

The Committee on Compulsory Legislation rendered a report which showed that through their efforts advantageous laws were passed in several states.

The report of the Committee on Standards was deferred until a later session.

The report of Committee on Tests was then read by Prof. R. C. Carpenter, no member of the committee being present.

The Committee on Standard Sizes of Steam and Return Mains presented its report, which said: "In regard to the recommendation of a standard, their investigations have led them to the conclusion that the use of such a velocity as will require of not more than one ounce to

one hundred feet in straight pipe to maintain it, represents, as near as they can at present ascertain, the best average practice in proportioning the sizes of steam and return mains.''

The report of Special Committee on Hot Water Heating showed that but little work had been done.

The Committee on Steam Heating on Small Buildings had no further report to render beyond that presented at the last summer meeting.

Tellers Appointed.

President John Gormly then appointed the following tellers: W. S. Washburn, James H. Brady and G. B. England.

Invitations for Summer Meeting.

Secretary W. M. Mackay then read communications inviting the society to hold its next summer meeting in Buffalo, Niagara Falls, Jamestown, Milwaukee and Atlantic City.

The meeting then adjourned to meet in the evening.

Tuesday Evening.

The Tuesday evening session was called to order at 8:30 by President Gormly, and the tellers announced the following officers elected for the ensuing year:

Newly Elected Officers.

President—C. B. J. Snyder, New York.

First Vice-President—James Mackay, Chicago.

Second Vice-President—William G. Snow, Boston.

Secretary—William M. Mackay, New York.

Treasurer—U. G. Scollay, Brooklyn, N. Y.

Board of Governors—R. C. Carpenter, Ithaca, N. Y.; Robert E. Atkinson, Leicester, England; Frank K. Chew, New York; Edmund F. Capron, Chicago, and Albert B. Franklin, Boston.

Papers Read.

A paper on **''Standard Sizes of Steam Mains''** was then presented by J. A. Donnelly, and another on **''The Carrying Pressure of Pipes in Low Pressure Steam Heating,''** by William Kent, and read by Prof. R. C. Carpenter, both of which brought out long discussion, in which W. J. Baldwin, R. P. Bolton, Prof. Carpenter and Mr. Taggart took part.

Adjournment was taken at 9:30 o'clock.

Wednesday Morning.

On Wednesday morning the members had an opportunity to inspect the new Engineering Building on West Thirty-ninth street, where the meeting was held, and its heating and ventilating equipment, with Mr. Nygren representing Alfred R. Wolf, heating engineer, who designed the work. E. T. Child, of the George A. Suter Company, New York, who installed the plant, was also present.

Auto Ride.

The entertainment committee arranged an automobile ride for the visitors and their ladies Wednesday morning, after which they attended the performance at the Hippodrome.

Wednesday Afternoon.

The society was called to order at 2:30. The first paper was upon **''Temperatures for Testing Indirect Heating Systems,''** by W. W. Macon, non-member of the society, and was read by the author and briefly discussed.

Committee on Standards: Wiltsie F. Wolfe moved that the report of the Committee on Standards, sent in by Prof. William Kent, chairman, be printed. His motion was carried.

Committee on Furnace Heating: Frank K. Chew, of the Committee on Furnace Heating, made a supplementary report.

''Derivation of Our Constants for Building Losses.''

Prof. R. C. Carpenter read a paper upon **''Derivation of Our Constants for Building Losses,''** which was followed by a short discussion.

Discussion.

A brief discussion of the topics announced on the program was followed by adjournment at 4 o'clock.

The Banquet.

On Wednesday evening the principal social feature of the society's annual meeting occurred, taking the form of a banquet, at which a number of ladies were present. The newly elected president, C. B. J. Snyder, acted as toastmaster, and the following toasts were responded to:

''Our Guests,'' Prof. F. R. Hutton, secretary of the American Society of Mechanical Engineers.

''The Illinois Chapter,'' James Mackay, who dispelled all doubt as to the great benefits to be derived from the organization of chapters of the society, and urged the organization of chapters in other centers.

''The Ladies,'' C. V. Kellogg, who congratulated the committee appointed to entertain the guests upon the felicity of having ladies present at the banquet, and expressed the belief that their presence would encourage a larger attendance at the summer meeting.

''Our Treasurer,'' responded to by Secretary W. M. Mackay.

Alfred E. Kenrick, because of his good work as former president and for his loyalty to the interests of the society, was presented with a loving cup. He thanked the society and expressed his great appreciation.

''Our Field,'' Prof. R. T. Carpenter, who said that much good work had been done in the past by the society, an enormous amount when the short time it has been organized is taken into consideration. There is still more important work to be done, and he expressed himself as having no doubt that the work would be accomplished by the enthusiastic members of the society.

''Law and Science,'' Senator Alfred A. Ray.

''Our Fame,'' Frank K. Chew.

Thursday Morning.

The meeting was called to order at 11 o'clock Thursday morning. A paper on the **''Comparison of Quick Circulating Systems of Hot Water Heating,''** by C. Guitton, of St. Etienne, France, was read by B. H. Carpenter, of Wilkes-Barre, Pa., the author being absent. A short discussion followed the reading of this paper.

Professor R. C. Carpenter then read his paper on **''Systems of Heating Railway Cars With Hot Water,''** which was followed by a long discussion by J. H. Davis, H. J. Barron, Professor Baldwin and others.

Topical discussion occupied the remainder of the morning session.

The meeting then adjourned to meet at 2:30 in the afternoon.

Thursday Afternoon.

After the meeting was called to order, Dr. J. M. W. Kitchen, of East Orange, N. J., was introduced and read a paper on the **''Relation of the Force of Gravity to Some of the Economics of Heating.''**

Installation of Officers.

President Snyder then assumed the chair, saying that he would devote his best efforts to maintain the high standard of his predecessor, and he pledged himself to further the interests of the society to the best of his ability. He thereafter installed the other newly-elected officers.

Appointment of Committees.

President Snyder thereupon appointed the following committee to collect data on Fan Blast Heating: W. G. Snow, chairman; R. C. Carpenter, J. H. Kinealy, F. R. Still and J. H. Brady. The other committees were reappointed.

Place of Next Meeting.

Secretary Mackay then read invitations to hold the next summer meeting in the following cities: Milwaukee, Niagara Falls, Jamestown, Atlantic City, Kansas City and Buffalo. Mr. Brady was given the floor and spoke for Kansas City. Mr. Chew called attention to the advisability of holding the meeting in the West for the sake of increasing the membership. The result was that the board of governors were requested to consider favorably the invitation of some one of the above-named Western cities as the next place of meeting.

The topical discussion brought out a proposal that the committee on standards be requested to confer with the National Association of Master Steam and Hot Water Fitters regarding Topic No. 12, which reads as follows: "Should the guarantee of efficiency be assumed by the heating engineer who designs the apparatus or the heating contractor who installs it?" This motion was carried.

It was 6 o'clock, and the final adjournment was now taken.

Those Registered.

John Gormly, Philadelphia; C. B. J. Snyder, New York; W. M. Mackay, New York; U. G. Scollay, Brooklyn, N. Y.; B. F. Stangland, New York; Albert B. Franklin, Boston; James Mackay, Chicago; Frank K. Chew, New York; L. J. Wing, New York; J. C. F. Trachsel, Philadelphia; Frank G. McCann, New York; J. H. Brady, Kansas City, Mo.; John F. Hale, Chicago; S. R. Lewis, Chicago; A. S. Armagnac, New York; J. A. Donnelly, New York; N. C. Schroeder, New York; C. G. Fundinger, New York; Jas. H. Davis, Chicago; E. F. Capron, Chicago; H. A. Smith, New York; N. P. Andrews, New York; G. B. England, New York; John A. Connolly, New York; Ed. K. Munroe, Baltimore; William S. Washburn, Brockton, Mass.; W. B. Duscoll, Jersey City, N. J.; Howard T. Gates, New York; J. S. Brennan, Milwaukee, Wis.; C. V. Kellogg, Chicago; Charles Morrison, Boston; Mark E. Monash, New York; Charles E. Scott, New York; C. L. Riley, New York; Thomas Barwick, New York; A. C. Edgar, Philadelphia; B. H. Carpenter, Wilkesbarre, Pa.; Henry B. Gombers, New York; Jos. Graham, New York; George E. Jennings, New York; Bert C. Davis, Kansas City, Mo.; H. H. Hess, New York; George H. Stibbs, New York; C. P. Vanderveer, New York; Frank C. Callister, Rochester, N. Y.; George L. Mott, New York; C. S. Hopkins, New York; Lawrence Franklin, Boston; Harry S. Martin, Dunkirk, N. Y.; Walter S. Appleton, New York; M. C. Corey, New York; Henry H. Ritter, New York; Fred J. Weider, Rochester; Arthur Bender, Bergenfield, N. J.; Walter Thompson, Jersey City; H. A. Wilson, Boston; Edward S. Mobley, Frederick, Md.; Charles H. Fay, Newark; J. B. Dill, Jr., Indianapolis, Ind.; A. G. Tjersland, New York; Hugh J. Barron, New York; F. G. Purdy, New York; F. Conway, Kiewitz, N. Y.; Raymond Carpenter, New York; Howard R. Barton, New York; Warren Webster, Camden, N. J.; Reginald Pelham Bolton, New York; A. M. Feldman, New York; H. C. Mallory, New York; M. C. Vrooman, Schenectady, N. Y.; G. A. Doneham, New York; D. Steuat, Wilkesbarre, Pa.; E. L. Bahr, New York; C. D. McArthur, New York; C. Teran, New York; J. D. Lahn, New York; Andrew Harvey, Detroit; John Mosner, New York; Herbert A. Joslin, New York; Frank M. Commer, New York; Richard Hankin, New York; Alfred E. Kenrick, Boston; John A. Payne, Jersey City; Wm. R. Munro, New York; Otto E. Moske, Cleveland; W. G. Le Compte, New York; E. J. Olmstead, New York; J. B. Bernhard, New York; J. J. Blackmore, New York; B. N. Hurd, New York; John H. Foote, New York; Wm. H. Switzer, Utica, N. Y.; Robert Mays, Jr., Washington, D. C.; U. S. Burnham, George W. Barr, Philadelphia; H. G. Boardman, New York; Edward B. Denny, Newark, N. J.; W. F. Wolfe, Philadelphia; John P. Schaffer, Pittsburg; E. J. Febrey, Washington, D. C.; R. H. Seward, New York; Homer A. Adams, New York; E. R. Swan, Cedar Rapids, Ia.; Willard P. Osborne, Camden, N. J.; W. H. Radcliffe, New York; E. F. Singer, Brooklyn, N. Y.; Louis J. Illig, Newark, N. J.; Walter L. Schroeder, Atlantic City, N. J.; J. M. Haller, Lancaster, Pa.; N. R. Lindemuth, York, Pa.; William E. Johnson, Warren, Ind.; William V. Rogers, Warren, Ind.; Robert B. Wetmore, Buffalo, N. Y.; Robert C. Denny, Newark, N. J.; Thomas A. Nugent, New York; J. B. Shanklin, Charleston, W. Va.; R. Barnard, Talcott, N. Y.; H. D. Crane, Cincinnati, O.; F. P. Richardson, New York; Prof. R. C. Carpenter, Ithaca, N. Y.; S. McCoy, New York; W. W. Macon, New York; George P. Crawford, New York; Charles E. Gorton, New York; Fred K. Oakes, New York; E. L. Stock, Buffalo; John Black, Trenton; Raymond H. Kinnear, New York; August Geiger, Philadelphia; L. H. Quackenboss, New York; George D. Hoffman, New York; F. P. Blodgett, New York; M. L. Kaiser, Wilkes-Barre; R. M. Carpenter, Wilmington; W. H. McKiever, New York; H. E. Baumer, Johnstown, Pa.; O. P. Simle, Johnstown, Pa.; D. Baumer, Johnstown, Pa.; W. G. Snow, Boston; Charles G. Armstrong, Newark; George W. Clark, Newark; J. P. Lisk, Troy; James H. Merritt, New York; A. A. Wilson, New York; T. J. Kielly, New York; Herman Z. Morsbrugger, New York; J. Boylston, Chicago; C. C. Lincoln, New York; Perry L. Hedrick, Chicago; Stewart A. Jellett, Philadelphia; W. J. Baldwin, New York; Winfield Scott, New York; Ph. G. Linker, New York; Thomas N. Thomson, Scranton, Pa.

Charles G. Fundinger.

New York City.—The National Association of Master Steam and Hot Water Fitters will hold its annual convention at the Arlington Hotel, Washington, D. C., May 21-23.

Brooklyn, N. Y.—The Brooklyn branch of the City of New York Association of Master Plumbers gave its annual entertainment and reception at Prospect Hall on Wednesday evening, January 23.

Illinois Master Plumbers Meet in East St. Louis

East St. Louis, Ill., Jan. 24.—(Special.)—This city, the gateway to Illinois, opened her gates yesterday to welcome the delegates to the fifteenth annual convention of the Illinois State Association of Master Plumbers, which convened here on Wednesday and Thursday, January 23 and 24.

Headquarters at the Royal Hotel as early as Monday night took on a very metropolitan appearance and local citizens became well aware that their city had the honor of entertaining a lively delegation of craftsmen.

On Tuesday night the members of the executive board met in the committee rooms at the Royal Hotel, when all preliminary business was transacted and details arranged for the opening session on Wednesday. Several resolutions and amendments to the constitution and bylaws were drafted at this meeting and placed in form for presentation on the following day. The following gentlemen were in attendance at this session: Charles T. Byrne, T. E. Walters, John C. English, Henry B. McVeigh and State Secretary W. C. Haviland.

Opening Session.

The large auditorium of the City Hall was utilized for the meetings of the convention and Wednesday morning shortly after 10 o'clock the members were in their seats, when with the rap of his gavel President T. E. Walters, of Aurora, called the opening session to order. With a cordial address of greeting he presented the Hon. Silas Cook, mayor of East St. Louis, who, after extending a warm welcome, spoke most interestingly on the marvelous advancement made in sanitary science, and in view of the deplorable conditions existing in East St. Louis in this respect offered his heartiest coöperation to the members of this association in their endeavor to procure an ordinance governing plumbing work for that city. His willingness in offering such assistance was greatly appreciated and the delegates gave voice to their feelings with loud applause.

The mayor's address was ably responded to by past National President Charles J. Boyd, of Chicago, who, on behalf of the delegates, thanked him for his kind interest displayed in their behalf. Continuing, he urged the members to unite in an endeavor to enforce the act of the state legislature relative to local city ordinances governing sanitary work, and to persistently urge the enactment of such an ordinance in East St. Louis. "The question of sanitary laws, gentlemen," he said, "is far too important to be overlooked by municipalities, as the establishment and rigid enforcement of such a law is absolutely vital to the public health."

Many interesting discussions were heard relative to this subject, and it seemed the unanimous consensus of the convention that this law should be enforced throughout the state. Several delegates explained the benefits to be derived from such an act, at the same time unselfishly pledging themselves to assist in carrying out its enactment. The morning session was largely consumed with discussion of this topic, and it is hoped that these endeavors will culminate in establishing perfect sanitary laws throughout the state of Illinois.

Returning to the general routine business of the convention, the Chair appointed F. G. Turner, of East St. Louis, and Joseph Scheuer, of Chicago, to act in the capacity of sergeant-at-arms and to carefully guard the portals of the convention hall during each session.

The following committees were selected:

By-Laws—W. J. Hilliard, J. E. Fitzgerald, T. E. Downey, Edward Barrett and W. J. Mullin.

Credentials—W. J. Lang, Chicago; W. J. Walsh, Champaign, and P. A. Desmond, Edwardsville, Ill.

Auditing—R. Haas, Springfield; C. D. Brownell, Champaign, and Geo. I. Kelly, La Grange.

Resolutions—J. M. Dougherty, Ottawa; J. P. Heeney, East St. Louis; E. B. Hazen, Peoria; E. J. Ryan, Danville, and Wm. Redieske, Chicago.

The following committee was chosen to draft suitable resolutions on the demise of S. G. Madden, of Mendota: Daniel O'Connor, Peoria; M. L. Mandrake, of Chicago, and Wm. Schlegel, of Belleville.

After the reading of several communications by the secretary the program of entertainment was announced by David J. Neenan, who with his colleagues displayed marked ability as hosts.

The report of the credential committee was read and showed the following delegates in attendance and entitled to seats in the convention. This list does not necessarily include ex-officio members:

Alton—D. Busse, Jr., and R. P. Kennedy.

Aurora—A. L. Beiver, W. J. Mullen, J. J. Ruddy, D. A. McGuire and G. Mylius.

Belleville—W. Schlegel, O. Goss and Geo. Hirth.

Cairo—Mr. Curry and John Dodd.

Champaign—C. D. Brownell, G. A. Magoon, F. Miller and W. T. Walsh.

Chicago—Wm. J. Lang, T. C. Boyd, A. W. Bahn, E. J. Benning, C. J. Boyd, Chas. C. Breyer, J. L. Corcoran, W. H. Cummins, F. J. Dillenberg, C. A. Dreier, T. E. Duffy, P. J. Foley, C. J. Herbert, D. J. Hickey, M. L. Mandable, J. C. Naughton, William Redieske, J. B. Ryan, P. Sanders, Joseph Scheuer, C. J. Stein and E. C. Wagner.

Danville—W. H. Carson, G. Carson, A. P. King, L. W. Straw and C. Burrow.

Decatur—T. E. Downing and G. Fox.

East St. Louis—Joseph P. Heeney, Edward Metzger and D. T. Neenan.

Edwardsville—T. A. Desmond.

Elgin—L. F. O. Flaherty and W. J. King.

Elmhurst—W. J. Hilliard.

Evanston—J. J. Cahill and M. L. O'Malia.

Glencoe—F. J. Luettig.

Joliet—F. W. Themis, Walter L. Erickson and G. Poehner.

Kewanee—B. C. Parkinson.

La Grange—Wm. J. Blaser, Geo. I. Kelley and J. J. Ryan.

Riverside—W. J. Taylor.

Lake Forest—J. E. Fitzgerald and John O'Leary.

Highland Park—A. Abercromby.

Macomb—W. J. Cox.

Mascoutah—Wm. Liebig.

Mattoon—Gill R. Capen.

Moline—A. F. Lockhart and V. Swanson.

Monmouth—J. W. Hays and G. Newhoff.

Ottawa—J. M. Dougherty.

Paris—Wm. Cantlon and Troy Porter.

Pekin—P. J. Kelly and R. D. Lackman.

Peoria—E. B. Hazen, Daniel O'Connor, C. W. O'Neill and W. Negley.

Peru—Wm. A. Schmoeger and Albert Fitzgerald.

Springfield—Edward A. Anderson, Owen Hanratty, Chas. Walz and L. P. Hopkins.

Sterling—Frank A. Trager and J. G. Dieterle.

Tuscola—L. D. Seass.

Adjournment was taken and immediately following the members with their families were grouped in front of the City Hall, where an excellent photograph was taken.

Wednesday Afternoon.

The afternoon session was opened with the reading of the minutes of the state executive committee meetings during the last year. This report was by motion referred to the committee on resolutions with the exception of all matter pertaining to the amending and revisement of the constitution and bylaws, which was entrusted to a committee appointed, through motion, by the Chair, consisting of the following gentlemen: W. J. Hilliard, of Elmhurst; F. E. Fitzgerald, of Lake Forest; T. E. Downing, of Decatur; Ed Barrett, of Joliet, and W. J. Mullin, of Aurora.

Officers' Reports.

President Walters read his annual report, which was an exhaustive document and clearly showed the workings of his office during the last year.

The report of the delegates to the national convention at Atlantic City was read by E. B. Hazen, of Peoria, chairman of that delegation.

State Secretary W. C. Haviland submitted his report for his initial year's work in which he gave a minute synopsis of his campaign since his acceptance of that office one year ago. The association through his persistent efforts has experienced a remarkable growth in membership. The members seemed highly gratified over this condition of affairs and unanimously thanked him for his earnest endeavors. The financial affairs of the association are in a most satisfactory condition and, in spite of the fact that its membership has been greatly increased, there are no back dues on the ledgers.

With a further announcement of entertainment the convention adjourned to meet the following morning at 9 a. m.

(To be continued in next week's issue.)

Wisconsin Master Plumbers in Convention at Milwaukee

Milwaukee, Wis.—The fourteenth annual convention of the Wisconsin Master Plumbers' Association was held in the convention hall of the Builders' Club, on Broadway, in this city, on Tuesday and Wednesday, January 15 and 16. The business of the convention was for the most part transacted behind closed doors, being almost exclusively of an executive nature.

Opening Session.

The convention was called to order at 10 o'clock Tuesday morning by President J. R. Williams, and Mayor Becker, of Milwaukee, made an address of welcome in which he dwelt at length upon the greatness of Milwaukee and assured the delegates of a hearty and generous welcome, adding that the keys of the city were at their disposal. The mayor's speech was so enthusiastically received that the convention immediately elected him an honorary member of the association.

The social proprieties having been duly observed, the convention got down to business quickly, and President Williams announced the following committees:

Credentials—William Neuman, of Ashland; I. Toussaint, of Milwaukee; C. S. Gregory, of Beloit.

Auditing Accounts—P. Ryan, of Appleton; Louis Sontag, of Sheboygan; H. Hugo Lippert, of Milwaukee.

Resolutions—D. J. Van Havenberg, of Eau Claire; William Halsey, of Milwaukee; Frederick Green, of Janesville; Grant Searles, of Delavan; William Owens, of Madison; John Williams, of Milwaukee; Peter Murphy, of Milwaukee.

As it was now 12 o'clock, a motion was made and carried to adjourn until 2 o'clock.

Afternoon Session.

The afternoon session was devoted to transaction of routine business, discussion of sanitary legislation and other vital topics. The problem of lead pipe theft came in for its share of attention. This annoyance has of late become altogether too common an experience to plumbers and owners of houses. The convention went on record as favoring an amendment to existing laws which will provide adequate punishment for this offense. A few pieces of pipe which the thief sells for 25 or 30 cents may damage a plumbing system to the extent of from $25 to $50. A fine of $5 or a short term in prison, it was declared, are inadequate degrees of punishment.

On Tuesday evening the visiting delegates were escorted to the various theaters by members of the local association.

Wednesday Sessions.

It was 11 o'clock before the convention was called to order for the second day's session. C. J. Boyd, ex-president of the National Association of Master Plumbers and member of its board of directors, who honored the convention with his presence, delivered an address on the state of the plumbing trade throughout the country, and he emphasized the importance of the National Association as a prominent factor in promoting the welfare of the trade.

Prof. C. F. Perry, manager of the Milwaukee School of Trades, was also present and made a speech explaining the efforts of the school to fit young men for the plumbing business. The master plumbers are enthusiastic endorsers of the School of Trades, and Prof. Perry's remarks were listened to with the closest attention and frequently interrupted with applause.

The convention backed up its endorsement of the school by voting an appropriation of $30 toward the maintenance of its plumbing department during the year.

The election of officers for the ensuing year took place at the close of the afternoon session, and resulted as follows:

President—Jacob Schuh, Milwaukee.
Vice-President—G. F. Reeke, Green Bay.
Secretary—P. H. Murphy, Milwaukee.
Treasurer—F. E. Green, Janesville.
Director—P. H. Ryan, Appleton.

Delegates to National Convention at Louisville—Jacob Schuh, Milwaukee; P. F. Cavanaugh, La Crosse, and W. W. Dusold, Milwaukee.

An elaborate banquet on Wednesday evening at the Blatz Hotel gave the convention a fitting close.

ASSOCIATION NEWS

Newark, N. J.—Thursday, January 10, 1907, marked another milestone in the career of the Newark Master Plumbers' Association. After a short business meeting with initiation of a new member to begin the year aright, the following officers were installed by past State President J. H. White, of Paterson, assisted by past State President Ira Budd, of Newark: President, S. F. Wilson; vice-president, Robert Zeitler; recording secretary, H. F. Baillet; financial secretary, Wm. Jacobi; treasurer, F. J. Sturn, and sergeant-at-arms, A. H. Rowe. The financial secretary and treasurer were the recipients of much enconium from the installing officers, the financial secretary beginning his fourteenth and the treasurer his thirteenth consecutive term.

St. Louis, Mo.—The Master Plumbers' Association, of this city, on Monday evening, January 14, installed the following officers to serve for the ensuing year: President, C. F. Walther, jr.; first vice-president, Thomas Hoban; second vice-president, Henry Moore; treasurer, E. C. Rosenthal; financial secretary, G. Breitt; recording secretary, A. A. Zertana; sergeant-at-arms, Joseph A. Ries. The installation exercises were presided over by Past President A. F. Fettig, as President Walther had succeeded himself to that office from last year. Mr. Fettig in introducing Mr. Walther dwelt upon the good work he had accomplished during his first term of office. Mr. Walther responded by thanking the association for the high honor conferred upon him and assured the members that he would work untiringly during the coming year to further the interests of the association. The other officers were then installed in turn and each made a short response in which they pledged themselves to perform the duties of their respective offices to the best of their ability. The meeting then entered upon a social session, presided over by A. F. Fettig, chairman of the entertainment committee, who introduced the different speakers, singers and players. An excellent supper was served during an intermission of this part of the program.

Philadelphia, Pa.—Nature favored the Master Plumbers' Association with the first real storm of the season on the evening of the annual banquet and entertainment Wednesday, January 16, given in Mercantile Hall. When the members, upon leaving their comfortable firesides and feeling the pinching frost as they encountered the storm, could scarcely refrain from thinking aloud: "Well, this year's Association dues will come back to me if this frost 'jist howlds on a bit'." And upon entering the hall that complacent smile was still apparent and broadened into a grin as the evening proceeded, for a jollier crowd would be difficult to find than sat down to the banquet that evening, where covers were laid for over two hundred. After the members were decorated with a pink and the guests with a white carnation, an excellent menu replenished the inner man, after which the stage entertainment was enjoyed by all. During the intermission on the program addresses were made by C. W. Fisher, of Harrisburg, president of the Pennsylvania Association, and Chas. M. Froelich, state secretary. The audience was also favored with some remarks from the Chief Inspector and his assistant of the House Drainage Division of the Board of Health, Robert Reed and John Bross, Select Councilman William Boal, Geo. F. Uber, chairman of the committee Gregor Drummond, and the president of the Association, H. L. Righter.

Albany, N. Y.—The Master Plumbers' Association of Albany on Thursday evening, January 17, gave a reception and dinner at the Ten Eyck in honor of B. J. O'Donnell, of Syracuse, president of the New York State Association of Master Plumbers. Eighty-nine guests were present on the occasion, which proved to be one of the most enjoyable held by the local association in its history. Governor Charles E. Hughes called early in the evening and held a reception in the parlor of the hotel, where he met many of the members of the association, their friends and guests, and his presence added much to the pleasure of the association. The Governor did not make a formal speech, but Lieutenant-Governor William Stuyvesant Chanler attended the dinner and made a brief address, which was particularly well received. He said, among other things, that in no country in the world has the art of plumbing advanced to such a degree as in this country. At the close of his remarks he did a very graceful thing by saying a complimentary word or two for Governor Hughes, and proposed the health of the Governor, which all drank standing, after which the cheering lasted for several moments. The members present were so well pleased with the address of the Lieutenant-Governor that he was declared eligible as an associate member of the association. The toastmaster of the occasion was former State President John E. Dugan, who for the past three years has carried the honors of that position. He was introduced by President Timothy E. Kerwin. John H. Moran responded to the toast, "Our Guests," and "The City of Albany" was the toast given to City Comptroller Howard N. Fuller. "Law and the Business Man" was the subject of the toast of Jacob C. E. Scott. National State Vice-President Horace F. Westcott spoke on "The National Association," and James J. Fitzsimmons on "Fraternity." John A. Howe, Jr., had "Some Pleasantries," which were unusually good. The guest of honor then responded to the toast, "The New York State Association." The banquet committee consisted of Frank F. Schimpf, chairman; Thomas F. Nolan, secretary; James J. Gorman, treasurer; Frederick W. Ridgway, Albion J. Eckert, Timothy E. Kerwin and John E. Dugan. During the evening many topical songs were sung, music being furnished by Holding's Orchestra. The song parodies were written by David M. Kinnear. Letters of regret were read from National President R. B. Moodie, of Dayton, O.; National Vice-President T. A. Hill, of New York; Frederick Weber, of New York; James P. Knight, president of the Manhattan branch of Greater New York Association; Charles H. Redfield, Westhampton Beach, N. Y.; John K. Allen, editor of "Domestic Engineering," Chicago; John Don, of Aird-Don Company, Troy, N. Y.; William Ferguson, Troy, N. Y.; George Copper, Binghamton, N. Y., and others.

The Fuel of Trade.

We all agree that a Boiler makes best combustion with a clean grate, free of ash and clinker. Just so the best union of the elements of a heating business are secured by clearing off old fashioned goods and filling up the trade with fresh, clean, up-to-date Boilers and Radiators.

One of the IDEAL Boiler Grates.

Fill the trade with IDEAL Boilers and AMERICAN Radiators and it is easier to "get up" the steam of business, keep an even pressure and "every radiator (or job) working".

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General Offices: 282-284 Michigan Avenue, Chicago.

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Philadelphia, 1342 Arch Street.
Baltimore, 109 E. Lombard Street.
Buffalo, Court and Franklin Streets.
Pittsburg, 601-603 Hartje Building.
Cincinnati, 213 W. Fourth Street.
Chicago, 282-284 Michigan Avenue.
Milwaukee, 126 Sycamore Street.
Indianapolis, 511 Lemcke Building.
Detroit, 225 Jefferson Avenue.
St. Louis, Olive and Fifteenth Streets.
Atlanta, 11 North Forsyth Street.
Omaha, 413-417 South Tenth Street.
Minneapolis, 229 Fifth Street, South.
Kansas City, 313 East Tenth Street.
Denver, 831 Fifteenth Street.
Seattle, 1215-1216 Alaska Building.
San Francisco, Monadnock Building.
London, E. C., 89-90 Shoe Lane.
Paris, 24 Rue de Mogador.

WHOLESALE PLUMBING

The Central Supply Association will hold its next meeting in Chicago on Wednesday, February 27, 1907.

The Humphryes Manufacturing Company, of Mansfield, Ohio, has recently equipped its enameling plant with new machinery and expects materially to increase its output.

The Cataract Faucet Company, of New York, has been incorporated with a capital of $10,000. The incorporators are A. W. Murphy, O. M. Kinkelde, T. W. McKnight, New York.

With a view to taking care of a larger volume of business in 1907 the Ideal Manufacturing Company, of Detroit, Mich., has materially added to its facilities for manufacture, and they have also increased their capital.

The employes of the Standard Sanitary Manufacturing Company, of Pittsburg, Pa., on January 16 held their annual banquet at the Fort Pitt Hotel, in that city. A number of the heads of departments made short but instructive addresses, and the employes presented General Sales Manager C. H. Reed with a handsome loving cup.

William R. Marshall, who has been associated with James B. Clow & Sons for most of the past thirteen years, has purchased an interest in the Davies Warehouse & Supply Company, 20 North Clark street, Chicago. He will occupy a position in their directory as vice-president. The board of directors at its last meeting voted to change the name of the firm to the Davies Supply Company. It is the intention of the firm to do a more extensive business with the plumbing and heating line than they have done heretofore, most of their business having been confined to railroads, water and gas works, and large corporate interests. The company would be pleased to receive catalog and discount sheets from all the manufacturers of plumbing material.

The Southwest Plumbing Supply Company, which has just engaged in business at 1618-1622 Main street, Kansas City, Mo., is composed of men who are thoroughly familiar with the trade, its officers being as follows: President, James La Tourette; vice-president, W. C. La Tourette; secretary and general manager, Geo. T. Hinds; treasurer, Charles V. Mos. President James La Tourette is a retired capitalist of St. Louis, formerly engaged in the smelting business at Marion, Ind. Vice-President W. C. La Tourette is and has been for years vice-president and general manager of the Cedar Rapids Pump Company, of Cedar Rapids, Iowa. Secretary and General Manager George T. Hinds until recently was for a number of years buyer and assistant manager of the United States Water & Steam Supply Company, of Kansas City, Mo., previous to which he was for twenty years in the employ of the A. Y. McDonald & Morrison Manufacturing Company, of Dubuque, Ia., and Chicago. Treasurer Chas. V. Mos was formerly credit manager of the United States Water & Steam Supply Company, of Kansas City, while W. A. Wild, who has also joined the new company, was formerly for many years connected with the L. Wolff Manufacturing Company, of Chicago. The new company thus starts out under the most auspicious circumstances and with promise of success.

WHOLESALE HEATING

Crane Company, Chicago, now has in full running order its new steel foundry, in which it will manufacture steel valves and fittings.

The McCrum-Howell Company, of New York City, announces that W. H. Finney has been placed in charge of its Philadelphia branch, with offices at 1222 Land Title Building.

The Pressed Radiator Company, of Pittsburg, Pa., announces that it has moved its branch office in Indianapolis, Ind., from the State Life Building to 912-914 Indiana Pythian Building. Willard McWorkman is in charge of this office.

R. B. Hunt, formerly traveling representative for the American Radiator Company and during the past two years connected with the H. B. Smith Company in a similar capacity, has been appointed manager of the New York branch of the Hart & Crouse Company at 235 Water street. He will assume his new duties on February 1.

We regret that an item published two weeks ago was so carelessly written that it conveyed a wrong impression. As we have previously stated, R. C. Cook resigned his position with the Boynton Furnace Company to establish a Chicago office for another company. J. Harvey Manny, Jr., succeeds to the position thus left vacant. Mr. Manny has been with the Boynton Furnace Company for several years and is a thoroughly practical and experienced heating man and salesman.

C. Howard Hook Company, is the style of a new firm which has just engaged in business as manufacturers' agent, with office at 41 Conestoga Building, 7 Wood street, Pittsburg, Pa. The officers of the company are: C. Howard Hook, president, and F. H. Knapp, secretary and treasurer. Mr. Hook is widely known as a nipple manufacturers, his plant being located at Homewood, Pittsburg. Mr. Knapp has been connected with the Pittsburg Supply Company for the past fourteen years, and was previously connected with the Joel Hayden Brass Works for nearly ten years.

The Niagara Radiator Company, of Buffalo and North Tonawanda, N. Y., recently held a meeting of its larger creditors at which it was decided to make an application for the appointment of A. N. McNabb as temporary receiver of the company, with the following advisory committee: Geo. H. Clune, of the Adrian Furnace Company; Harry Yates, of the Rochester & Pittsburgh Coal & Iron Company; W. D. McKeefrey, of McKeefrey & Co.; Robert L. Cox and R. L. Ginsburg, of A. L. Ginsburg & Sons. A statement submitted to the creditors showed that the assets amount to a little over $352,000, with liabilities of $211,533. It was also shown that the company has been doing a business of $400,000 to $500,000 annually, and that the trouble was that the business of 1906 was conducted at a loss owing to a lack of adequate working capital. It is expected that sufficient new capital can be interested to put the business on a sound basis. The receiver has therefore been asked to begin operating the business as soon as possible, and the creditors have been requested to refrain from taking action that will interfere with the receiver's efforts along this line.

STEAM and MILL SUPPLIES

Clark & Cowles Valve Co., of New York City, has been incorporated with a capital of $25,000. The incorporators are W. G. Clark, R. A. Cowles and G. W. Kyburg, all of New York.

The Detroit Lubricator Company, Detroit, Mich., has increased its capital stock from $300,000 to $1,000,000. H. I. Lord, formerly of the American Radiator Company, has taken the position of sales manager with the company.

The H. R. Boynton Company has just engaged in the steam and mill supply business at 216 North Los Angeles street and 325-331 North San Pedro street, Los Angeles, Cal. The officers of the company are: H. R. Boynton, president; A. A. Braly, vice-president; J. V. Vickers, secretary; W. S. Babson, buyer. The directors are Wm. G. Kerckhoff, Walter S. Newhall, Dan Murphy and John H. Norton.

The Borden Company, of Warren, O., has broken ground for the erection of its new plant in that city, to be devoted exclusively to the manufacture of hand and power pipe threading machinery. The buildings will be constructed of brick and iron, and hence absolutely fireproof. They will all be one-story high with the exception of the office building, which will be a two-story structure. Work will be pushed along rapidly, as the company expects to have the plant ready for occupancy early in the spring. The new plant will be equipped with up-to-date machinery.

PERSONAL

Charles G. Jewett, of Howell, Mich., was in Chicago this week.

Alfred Fowle, Jr., formerly president of the Central Foundry Company, expects soon to take an extended trip to southern California, after which he will consider plans for his future business connections.

Lewis Curtis, of the Curtis & Curtis Company, Bridgeport, Conn., sailed this week for a trip through the Mediterranean Sea. Mr. Curtis will spend considerable time in Egypt and will return to this country in May.

Wm. Paul Gerhard, the prominent sanitary engineer, sailed for Europe on the Kronprinz Wilhelm on Tuesday, January 22. He will remain abroad three or four months studying sanitary problems of the larger cities in Germany, France and Holland. He will also visit his old home after an absence of thirty years.

Wm. A. Davis, formerly organizer for the National Association of Master Steam and Hot Water Fitters, will begin his duties on February 1 as organizer of the National Association of Boot and Shoe Manufacturers. His field will lie mostly east of New York, but there will be occasional visits to Chicago and the middle west.

Rollin C. Wilson, Transit Building, New York City, has the sympathy of his many friends in the trade on account of the demise of his father, Joseph W. Wilson, which occurred at his home in Easthampton, Mass., on January 12, in his seventy-sixth year. Mr. Wilson was a partner

CAPITOL BOILERS AND RADIATORS

Easy to Install

The Capitol is the easiest boiler on the market to install, as it built in units or divided half sections. It is light and compact for the steam fitter to handle. If the entrance to the basement is small or narrow there is no need to tear away a section of the wall. The Capitol can be taken in by sections and set up in the basement. This means ease of operation to you. No time lost, hence bigger profits. Write for our new catalogue.

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CHICAGO, 42 Dearborn Street
KANSAS CITY, MO., 114 W 11th Street
OMAHA, NEB., 419 S. 15th Street

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BOSTON, MASS., J. H. Cunningham & Co.
DENVER, COLO., Kellogg & Stokes Stove Co.
MINNEAPOLIS, MINN., Plumbing & S. F. Supplies Co.

in the firm of Rust, Wilson & Co., and was held in high esteem, having been town treasurer for twenty years and town clerk twenty-four years and ten months.

Fort Scott, Kan.—H. Ingham has purchased the plumbing business of J. J. Marshall.

Ionia, Mich.—The plumbing firm of Breckon & Gable at 432 West Main street has been dissolved by mutual consent. R. J. Breckon retires and Henry Gable will continue the business at the old stand.

OBITUARY

Albert F. Lloyd, a plumber of Verona, Pa., passed on at his home last week. He was 32 years of age.

Robert Harper, a master plumber of Philadelphia, on Thursday evening, January 17, passed on suddenly from apoplexy while enjoying the first sleighing trip of the season. Mr. Harper has been engaged in business at 217 North Sixteenth street for thirty years. His two sons, following the same vocation, have relieved their father of the active work for several years.

George W. Anderson, one of Philadelphia's oldest master plumbers, in his eighty-first year passed on at his residence January 16. For the past thirty years his establishment has been located at 1229 Girard avenue. A trolley accident which Mr. Anderson met with last May incapacitated him, and this, together with his advanced years, hastened his demise. He was a member of the Masonic fraternity, the Odd Fellows and the Master Plumbers' Association. His widow survives him.

James D. Thompson, a retired master plumber of Philadelphia, passed on at his home on January 12, 1907, in his sixty-eighth year. Mr. Thompson engaged in business in 1870 and retired eight years ago, but was still retained as an honorary member of the Master Plumbers' Association. Six weeks ago, on one of his frequent drives, his horse became frightened at a passing automobile and dashed through the streets for a distance of several blocks, and collided with a trolley car, killing the horse and throwing Mr. Thompson out of the carriage, causing injuries which resulted in his demise.

The Late John Sewall Connell, of Chicago,
Whose demise was chronicled in this column last week.

Buyers' Ready Reference List

Expansion Bolts.

STAR EXPANSION BOLT CO., 147 CEDAR St., New York City. Manufacturers of Expansion Bolts in Iron, Brass and Lead. Star Screw Anchors (Lead) are indispensable to Plumbers.

Couplings.

W. I. COUPLINGS; BLACK, GALV., LIME Pipe and Hydraulic. The A. & J. Mfg. Co., 26 W. Randolph St., Chicago, Ill.

Gas Fixtures.

E. BAGGOT CO., 169 ADAMS ST., CHICAGO, Ill. Makers of Gas Fixtures and Fittings

Pipe, Cast Iron.

CHAS. MILLAR & SON CO., UTICA, N. Y. Superior quality Cast Iron Gas and Water Pipe, Cast Iron Soil Pipe and Fittings, Cast Iron Screwed Fittings.

Pumps.

AMERICAN STEAM PUMP CO., BATTLE Creek, Mich. Makers of Marsh Steam Pumps for hot and cold water.

Traps, Steam.

THE ALBANY STEAM TRAP CO., Albany, N. Y. Improved Return Steam Traps. Practicability and efficiency.

Water Closets.

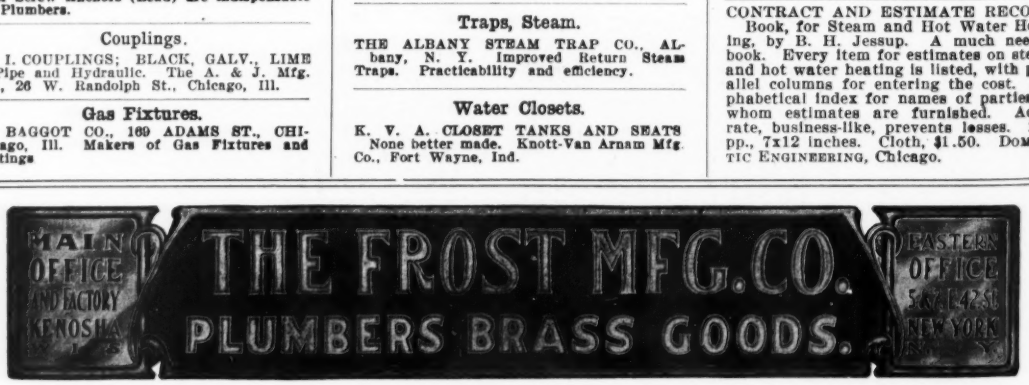
K. V. A. CLOSET TANKS AND SEATS None better made. Knott-Van Arnam Mfg. Co., Fort Wayne, Ind.

THE R. C. McCLURE CO., SYRACUSE, N. Y. Mfrs. of the very highest grade of Water Closets. Send for booklet.

Books.

LAWLER'S MODERN PLUMBING. Covers both plumbing and heating. One of the most practical works ever written. 400 pp., 7½x10 inches, 187 illustrations. Extra cloth, $5.00. DOMESTIC ENGINEERING, Chicago.

CONTRACT AND ESTIMATE RECORD Book, for Steam and Hot Water Heating, by B. H. Jessup. A much needed book. Every item for estimates on steam and hot water heating is listed, with parallel columns for entering the cost. Alphabetical index for names of parties to whom estimates are furnished. Accurate, business-like, prevents losses. 200 pp., 7x12 inches. Cloth, $1.50. DOMESTIC ENGINEERING, Chicago.



PATENTS

840,496. **Wrench.** Joseph M. Justen, Toledo, Ohio, assignor of two-fifths to Otto Augsbach, Toledo, Ohio.

840,613. **Flushing-tank.** Frederick Findeisen, Chicago, Ill.

840,633. **Gate-valve.** John P. Ladd, Alliance, Ohio.

840,772. **Automatic safety valve for gas-supply pipes.** Adolph W. Jenczewsky, Chicago, Ill.

840,796. **Gas-controlling device.** Richard N. Oakman, New York, N. Y.

840,831. **Gas-burner.** John Doorenbos, Kalamazoo, Mich., assignor to National Gas Light Company, Kalamazoo, Mich., a corporation of Michigan.

840,860. **Faucet.** Otto Mueller, New York, N. Y.

840,916. **Humidifier or air-moistening apparatus.** Stuart W. Cramer, Charlotte, N. C.

840,954. **Valve.** Henry S. Pinkerton, Juno, Tex.

841,049. **Ventilating apparatus.** John S. Roake, New York, N. Y.

841,092. **Self-closing cock.** Henry Mueller, Decatur, Ill., assignor to H. Mueller Manufacturing Company, Decatur, Ill., a corporation of Illinois.

841,093. **Basin-cock.** Henry Mueller and Anton Schuermann, Decatur, Ill., assignors to H. Mueller Manufacturing Company, Decatur, Ill., a corporation of Illinois.

841,095. **Safety-valve for high-pressure tanks.** Eugene F. Osborne, Chicago, Ill.

30% Too Much

The average hot water heating job contains at least 30 per cent too much water. We will tell you free, how to eliminate it, saving 10 per cent in material, 25 per cent on labor of installation and much fuel in operation. Don't send any money, for our engineering advice is free. Write us now.

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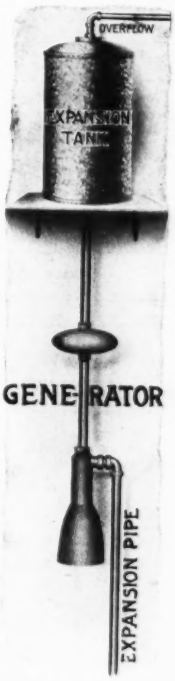
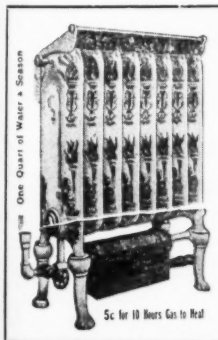
Wabash, Ind.





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Regulated by a Thermostat so as not to raise the temperature of the water above a specified degree. When other heaters that cannot be controlled send the water to the boiling point, the lime and other minerals are precipitated and form a bad incrustation. This heater uses gas for fuel and is very economical. Send for our booklet. It is free. Address all letters to

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SILVER CREEK, N. Y

Domestic Engineering

Published Weekly by Domestic Engineering (Incorporated), $1.00 a Year, 5 cents a Copy. Office: 58-64 North Jefferson Street, Chicago. Tel. Monroe 816.

Advertising—Copy and cuts for advertisements should be received by the last day of the week preceding publication. We cannot guarantee insertions or changes in advertisements if received later.

Entered in the Postoffice in Chicago, Illinois, as mail matter of the second class, Dec. 12, 1901.

January 26, 1907

Classified Advertisements

The rate of advertising under this heading is 10 cents a line an insertion. The average advertisement runs six words to a line. To insure insertion in this column copy should be received not later than Wednesday afternoon.—One man from Opelika, Ala., writes under date of January 18, 1907: "The little ad I had in Domestic Engineering on the 12th inst. has brought me 27 inquiries up till today. I consider it the best magazine that ever went into any office."

Help Wanted.

WANTED—SALESMEN TO HANDLE plumbing specialty as side line. Address The Snow Mfg. Co., Denver, Colo. 3-9

WANTED—SALESMEN TO HANDLE plumber's office specialty as side line; liberal commission. Address W. J. Gilchrist, Buffalo, N. Y. 1-29

WANTED—YOUNG MAN AS SALESman for line of steam and water boilers and specialties in Chicago and suburbs. No. 612, "Domestic Engineering," Chicago. tf

WANTED—SALESMAN TO CARRY A first class ball cock as a side line; a ready seller and gives satisfaction; state what territory you cover. No. 619, "Domestic Engineering," Chicago. tf

WANTED—FIRST CLASS SALESMAN to handle our line of Plumbers' Brass Goods; must have the necessary experience and furnish the very best of references. The Sanitary Co., Cleveland, Ohio. tf

WANTED—TRAVELING MAN FAMILIar with exhaust steam heating to sell a line of Feed Water Heaters Reducing Valves, Back Pressure Valves, and Vacuum System specialties State experience and salary expected Address 629, "Domestic Engineering", Chicago. 1-26

WANTED—A THOROUGHLY COMPEtent man to make plans and shipping lists for low pressure hot water heating jobs; one accustomed to greenhouse heating preferred; steady position; state salary expected. No. 630, "Domestic Engineering," Chicago. 2-2

Situations Wanted.

WANTED—TO CORRESPOND WITH a heating or plumbing firm in need of the services of a first class superintendent and estimator, with years of practical experience. No. 626, "Domestic Engineering," Chicago. tf

WANTED—TO REPRESENT MANUfacturers or good jobbing house or houses in plumbing, steam, engineers' and mill supplies on a commission basis. State particulars. No. 632, "Domestic Engineering," Chicago. 1-26

WANTED—POSITION PAYING GOOD salary by man who has been nine years in the plumbing supply business as assistant manager and three years in factory and sales department of large hardware goods manufacturer. No. 631, "Domestic Engineering," Chicago. 1-26

For Sale.

FOR SALE—NEW GALVANIZED VERtical range boiler with steam coil; 144 gal.; 6 ft. by 24 in. J. C. Bixby & Son, Council Bluffs, Ia. tf

FOR SALE—A LONG ESTABLISHED branch in the plumbing, steam, roofing and tinsmithing business in the best part of the Bedford Section of Brooklyn; only $300 required. J. B., 1226 Sterling Pl., Brooklyn. tf

FOR SALE—FOR CASH ONLY, BEST plumbing, heating and lighting business in the boom town of New Castle, Ind. Good power shop, clean stock, room and location; health the reason for selling. Address Winslow D. Jennings, 1508 Broad St., New Castle, Ind. tf

FOR SALE—A WELL-ESTABLISHED plumbing and heating business in Illinois town of 15,000; have clean up-to-date stock which will invoice about $900; a fine opportunity for the right party; will sell at a bargain. Address 591, "Domestic Engineering," Chicago. tf

Miscellaneous.

IN ORDER TO SECURE THE CO-OPeration of active partner, a well established jobbing house of plumbers' supplies located in a southern city of 125,000 inhabitants will sell one-half interest. Address 592, "Domestic Engineering," Chicago. eow

Plumbing Schools.

WE TEACH YOU THE PLUMBING TRADE. Pays best wages; insures steady work; makes you independent. Write today. Plumbing School, Minneapolis, Minn. 10-'06

Books.

AMERICAN PLUMBING PRACTICE. Just the book to help ambitious plumbers develop their trade from cheap to high grade work. 260 pp., 8x11 inches, 536 illustrations. Cloth, $3.00. "Domestic Engineering," Chicago.

PLUMBING CATECHISM, OR THEORY and Practice of Plumbing Design. By Charles B. Ball, M. Am. Soc. C. E., and M. Am. Soc. Inspectors of Plumbing and Sanitary Engineers, and Herbert T. Sheriff, A. B., some-time Editor "Domestic Engineering." Mem. Am. Plumbing and Sanitary Engineers. Bound in cloth; 6¾x4¾; 100 pp.; elaborately indexed. $1.00. "Domestic Engineering," Chicago.

60 YEARS' EXPERIENCE

PATENTS

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DESIGNS
COPYRIGHTS &C.

Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communications strictly confidential. HANDBOOK on Patents sent free. Oldest agency for securing patents. Patents taken through Munn & Co. receive *special notice*, without charge, in the

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A handsomely illustrated weekly. Largest circulation of any scientific journal. Terms, $3 a year; four months, $1. Sold by all newsdealers.

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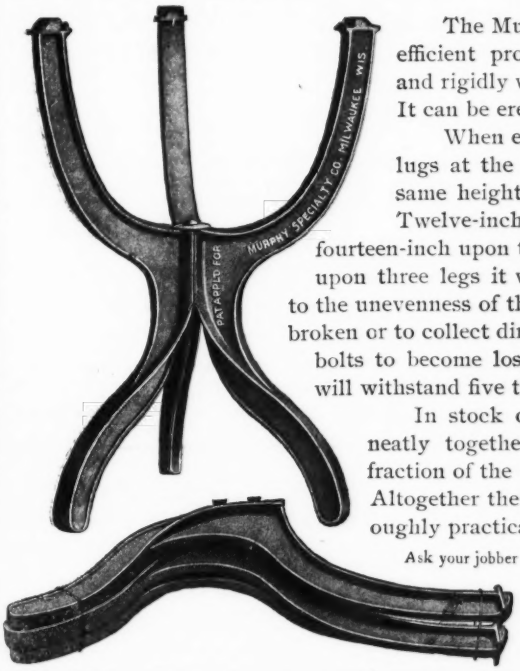
Branch Office, 625 F St., Washington, D. C.

POWER in a WRENCH

A wrench that slips or crushes the pipe is useless—the striking advantage of using the BULLARD AUTOMATIC WRENCH is its extraordinary strength and its application, which prevents crushing the pipe. The BULLARD can be used in any position—with one hand. The time spent fussing with nut and screw wrenches is saved. A BULLARD AUTOMATIC in use will pay for itself in two months in time saved. Ask your dealer. Replace your old wrench with this modern one.

Bullard Automatic Wrench Co. Providence, R. I.

THE MURPHY BOILER STAND



The Murphy Boiler Stand is a modern, economical and efficient product made in three pieces, fitting accurately and rigidly when joined by means of a single four-inch bolt. It can be erected on the job in less than half a minute.

When erected and in use, the rim of the boiler rests on lugs at the top of the arms supporting all boilers at the same height, regardless of the curvature of the bottom. Twelve-inch boilers are supported upon the inside and fourteen-inch upon the outside lugs without adjustment. Resting upon three legs it will support the boiler steadily without regard to the unevenness of the floor. There is no ring, top or bottom to be broken or to collect dirt or grime, nor any unnecessary parts or small bolts to become lost. The stand is scientifically constructed and will withstand five times the strain of ordinary use.

In stock or prepared for shipment, the parts are wired neatly together, as in illustration, and occupy but a small fraction of the space necessarily given to the old style stand. Altogether the Murphy stand is graceful in appearance, thoroughly practical, sanitary and efficient.

Ask your jobber for the Murphy Boiler Stand suitable for 12 and 14-in. boilers.

CENTRAL FOUNDRY CO.
116 Nassau Street, New York City
87 N. May St., Chicago, Ill.

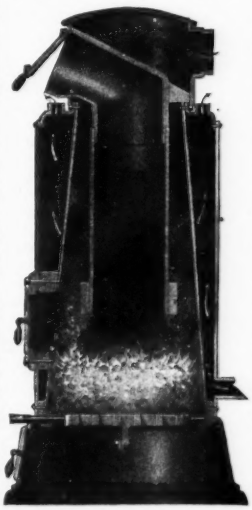
The Champion Water Filter

Is the only perfect and complete one!

Simple, easily cleaned and operated. Fits any faucet. Catalogue and prices of complete line upon application.

The
Champion Safety Lock Co.
GENEVA, OHIO.

TABASCO
WATER HEATERS



Because they have been scientifically built from the start is the reason an unequalled reputation has been earned by these popular heaters.

They are built of exactly the right material—high grade, tough steel.

It will pay you to be known as the plumber or fitter who handles only the best heater.

You should have our literature.

KEWANEE BOILER COMPANY
KEWANEE, ILLINOIS

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OF OUR PATENT SUPPLIES

$1,000 CASH REWARD

WILL BE GIVEN TO ANY PERSON WHO CAN PROVE AND CONVICT ANY ONE FRAUDULENTLY USING OUR NAME ON SUPPLIES

GLAUBER ONE PIECE SOLID COLLAR BATH COCK SUPPLY PIPES FIT EVERYWHERE : : :

GLAUBER BRASS MFG. CO.

CLEVELAND, OHIO.

EXPERT BRASS GOODS MAKERS

49 TO 51ST SUPERIOR AVE.

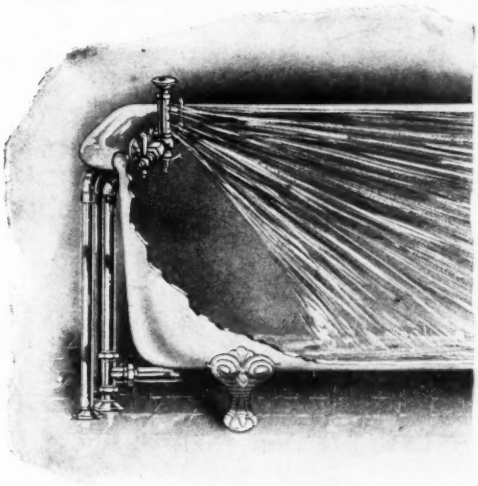
The Owen Novelty Co.

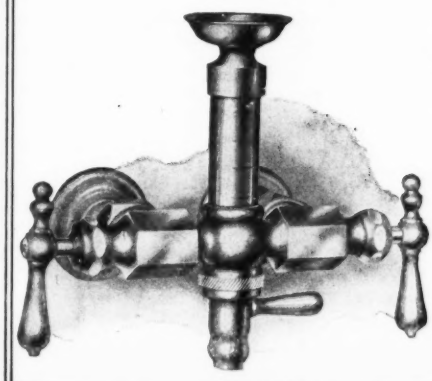
INCORPORATED

170 S. Clinton St., Chicago, Ill.

Manufacturers of the

Brooks-Owen Shower Bath Cock

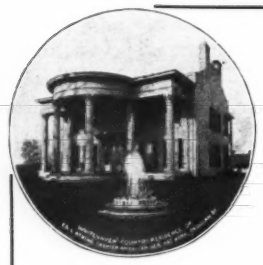




Something New Unique and Desirable

A Shower and Bath Cock Combined

Is the only fixture of the kind on the market whereby a Perfume, Medicated, or any desired shower may be enjoyed. The shower part of this fixture contains no washers or packing of any description. Water may be drawn for the bath, or shower, without adjusting any of the parts. ¶ *For sale by THE OWEN NOVELTY COMPANY, and all plumbers, and dealers in plumbing supplies. FOR FURTHER INFORMATION SEND FOR ILLUSTRATED CIRCULAR.*



The

KEWANEE
System of Water Supply

¶ Over seven thousand Kewanee Systems in operation. Every one is a success. Nearly all were installed by plumbers.

¶ Over three million readers each month of publications in which the Kewanee System is advertised. Result,—hundreds of inquiries received every week which are referred to plumbers.

¶ Over thirty-five hundred live plumbers have received prices and discounts; and most of them are prepared for "Kewanee" business. Do YOU know about the Kewanee System?

¶ Wherever a highly satisfactory water supply system—better than elevated or attic tanks—is desired, the Kewanee System will make good. We guarantee that.

¶ Each Kewanee System is installed at our risk—not yours.

¶ It will be worth your while to write us at once for catalogs and discounts. Our reply may help you increase your business.

Ask for Price Book No. 45

Kewanee Water Supply Co.

DRAWER UU, KEWANEE, ILL.

Buildings illustrated, equipped with Kewanee System

LUDLOW

Gate Valves
Fire Hydrants
Sluice Gates
Cast Iron Pipe
Water Works
SUPPLIES

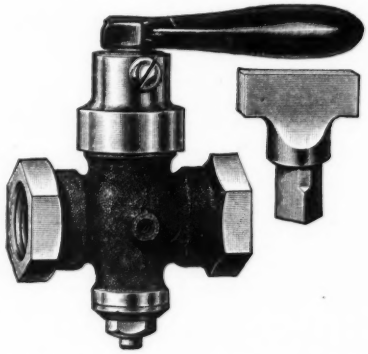
MANUFACTURED BY

PITTSBURGH MFG. CO.

PITTSBURGH, PA.

WRITE FOR OUR CATALOGUE

THE FOREST CITY BRASS MFG. COMPANY



THE distinctive feature of our Stop & Waste Cocks is a loose pin with two holes in plug which enables the operator to make either right or left hand by simply removing the cap. We want to send you a sample and quote a low price on all orders received during January.

CLEVELAND, OHIO

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DON'T BUY "M" asqueraders

HYDRANTS with the full name "Murdock" cast on the stock thus

are the

ONLY GENUINE MURDOCK HYDRANTS

When ordering Hydrants order the **genuine "Murdock" Hydrants** (be careful to use the FULL NAME) and see that the FULL NAME is cast on the stock.

That is the only way to get the REAL, the ORIGINAL

The Genuine Murdock Hydrants

SOLE MAKERS

The Murdock Mfg. & Supply Co.

PLUMBING, GAS AND STEAM SUPPLIES

PROPRIETORS OF
AMERICAN BRASS WORKS
GENERAL BRASS FOUNDERS AND MANUFACTURERS OF PLUMBERS' SPECIALTIES

Cincinnati, O.

EASTERN AGENT
THOS. H. HUTCHINSON
101 BEEKMAN ST.
NEW YORK

"K" Screwed Fittings "K"

(NONE BETTER)

We have in stock at sacrifice prices a

Broken Lot of "K" Fittings

which will be sold at once. Orders filled as received
No favorites. Write today for list and prices. Also

Pipe, Valves Etc.

OUR CATALOGUE FOR THE ASKING

GEO. B. LIMBERT & CO.

49-55 Fulton Street Chicago, Ill.

M. I. W. Boiler Stands

Showing Adjustment.

Architects
Plumbers
and
Builders
Like
Them

If
space in
your stock
room is an
object
this stand
should have
your
consideration

Ready for Shipment.

Modern Iron Works

Quincy, Ill.

Write for Prices.

We Ship Promptly

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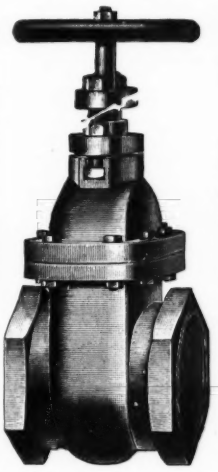
HARVEY'S



GATE VALVE

Discs interchangeable. Can be packed either opened or closed. Full weight, first-class material, superior finish.

Made in Brass and in Iron Body, both screwed and flanged. Bell ends. Rising stem and yoke. Standard, medium or extra heavy. For water, steam, gas or oil.

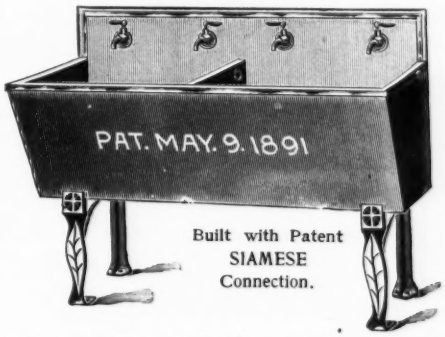
Send for Circular.

A. HARVEY'S SONS MFG. CO., Ltd.
Manufacturers of Steam, Gas and Plumbing Goods
DETROIT, MICH.

The
Elsmere Granitine Tray Is Superior to Soapstone

Being cast in one piece without joints or seams it affords no place for germs or dirt to collect and is therefore

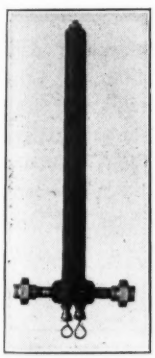
WHOLLY SANITARY



Built with Patent SIAMESE Connection.

We have a large stock of different sizes always ready for shipment. While we are glad to receive carload orders, still we are thankful for smaller ones. Jobbers and Plumbers, write us today for further particulars.

The Elsmere Granite Co.
947-951 North Spaulding Avenue, CHICAGO, ILLINOIS



PATENT FURNACE WATER HEATER

This heater can be installed in any furnace without disturbing the fire. Will furnish sufficient water for ordinary domestic use. Easily connected and after once installed can be removed and replaced in 30 minutes. Equipped with brass rods to remove all deposits. Made in three sizes.

GATES & FOX
419 E. 16th Street Indianapolis, Ind

The Champion WATER LIFT

FOR PUMPING SOFT WATER

Well made. Noiseless. Requires no oil or attention. Is absolutely automatic. Guaranteed to you, to give perfect satisfaction. Write for prices and further information.

The Cleveland Faucet Co.
Cleveland New York Chicago
St. Louis San Francisco

REX

INSTANTANEOUS AUTOMATIC WATER HEATER

ATTENTION, MR. PLUMBER.

Do you know that you can furnish your customer with a REX for about one half the price of other reliable heaters?

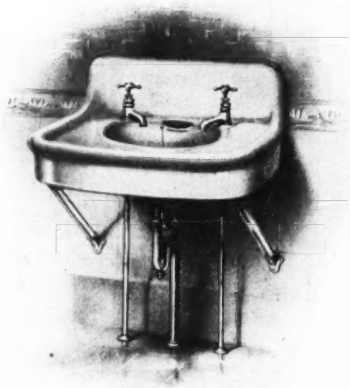
NOTICE

Our coil is wound so that direct impingement of the flame is obtained on a large portion of the copper tubing, thereby giving the highest efficiency.

Every heater is perfectly reliable and guaranteed to give satisfaction. Write us today for further information and discount

THE CLEVELAND HEATER CO.
2100 Viaduct N. W. : : : : Cleveland, Ohio

AN AMAZING ADVANCEMENT FAVORING GREATER SELLING



The ***Overflow or Soap Drip*** is large enough to permit the hand going down with a cloth to wipe it out. This is a good point; one which will enable you to convince a customer to buy quickly. Our vitreous earthenware goods are the best on the market. You will be pleased with our new catalogue?

Send in your name to-day.

FORT PITT Supply Co PITTSBURG PENN.

We also carry an immense stock of Plumbers' Supplies ready to ship at a minute's notice.

FORT PITT Supply Co PITTSBURG PENN.

Steam Heating Contracts and Specifications:

We have now for sale a standard specification and contract for low pressure steam heating. It is elastic and suited to large and small contracts. Printed on good quality linen paper. Price list, delivered to you:

50 copies	$ 2.50
100 copies	3.50
500 copies	10.00

Terms: Chicago or New York draft with order. Sample sent free

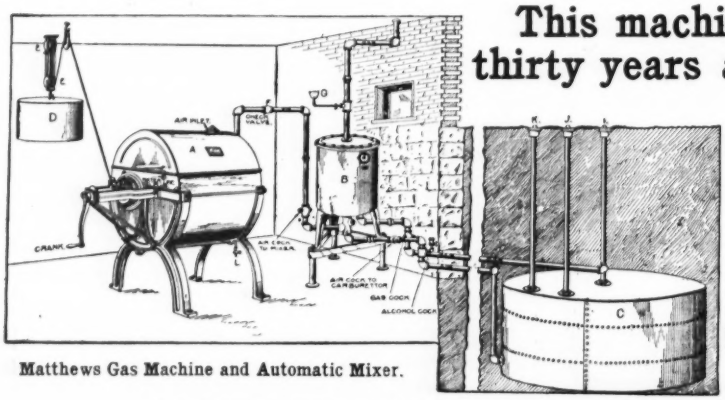
DOMESTIC ENGINEERING

58-64 N. Jefferson St., Chicago, Ill.

Johnson's Handy Manual

contains hundreds of valuable hints and short cuts to lighten the labor of the plumber and fitter. ¶ Tells how to ascertain the length of pipe required in 45 deg. angles; how to take measurements of pipes and fittings; how to determine exposure and proportion radiation; the proper method of taking off connections in steam and hot water piping, etc. **Price $1.00.**

DOMESTIC ENGINEERING,
58-64 N. Jefferson Street, CHICAGO



Matthews Gas Machine and Automatic Mixer.

This machine has made gas thirty years at ¼ cent per hour

per 80 candle power. Makes gas for lighting, cooking and fuel.

WRITE FOR OUR PROPOSITION

Matthews Gas Machine Co.
40 Dearborn Street, Chicago

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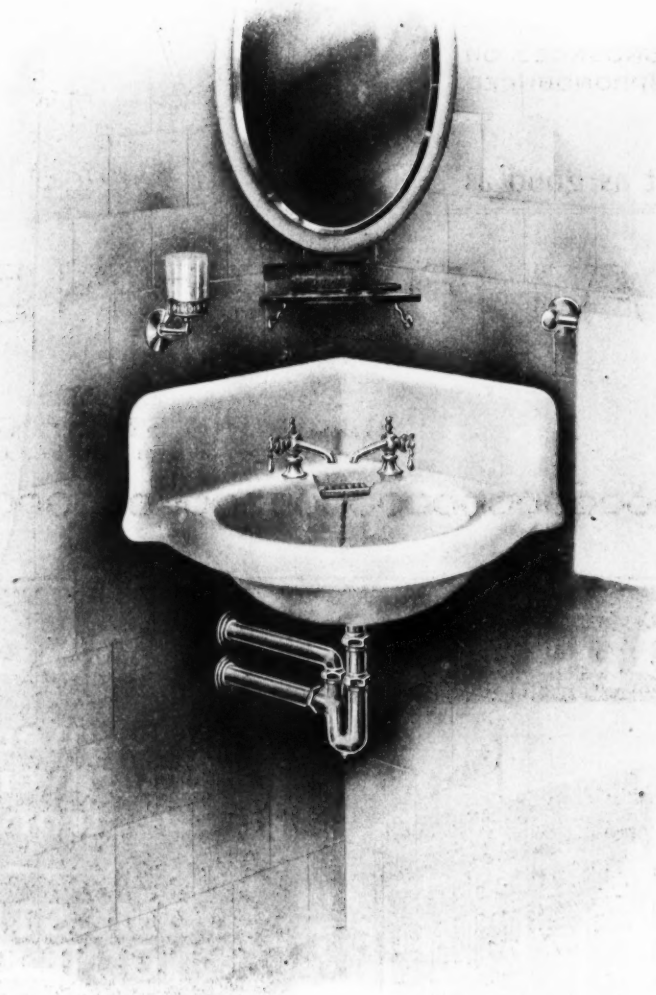
Perfection has been reached



Vitreous earthenware lavatories are now conceded to be the highest development in sanitary fixtures. They are durable, cleanly and artistic. This is Plate K No. 10 from our beautiful catalogue, which will be sent upon request.

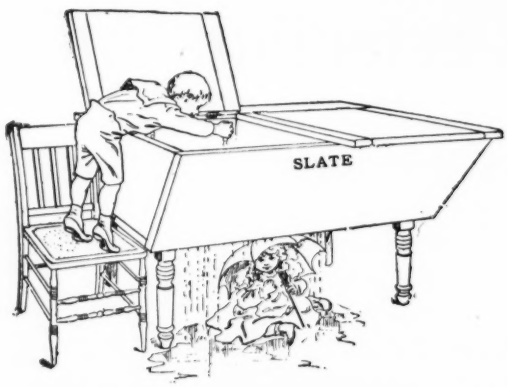
THE GREAT WESTERN POTTERY CO.

KOKOMO, INDIANA **TIFFIN, OHIO**

This is one of the
Laundry Trays

PRONOUNCED OR
MISPRONOUNCED

"Just as good as"



ALBERENE

OUR CATALOG—a postal will bring it—shows you that the
CLAIM IS FALSE

NEW YORK
BOSTON
PHILADELPHIA
PITTSBURGH

ALBERENE STONE COMPANY
54-60 North Clinton St., Chicago

Simpson, Bevans & Co.

Designers
Engravers and
Electrotypers

to the

"DOMESTIC
ENGINEERING"

Special attention
given to out-of-town trade.
Prices and Samples on application

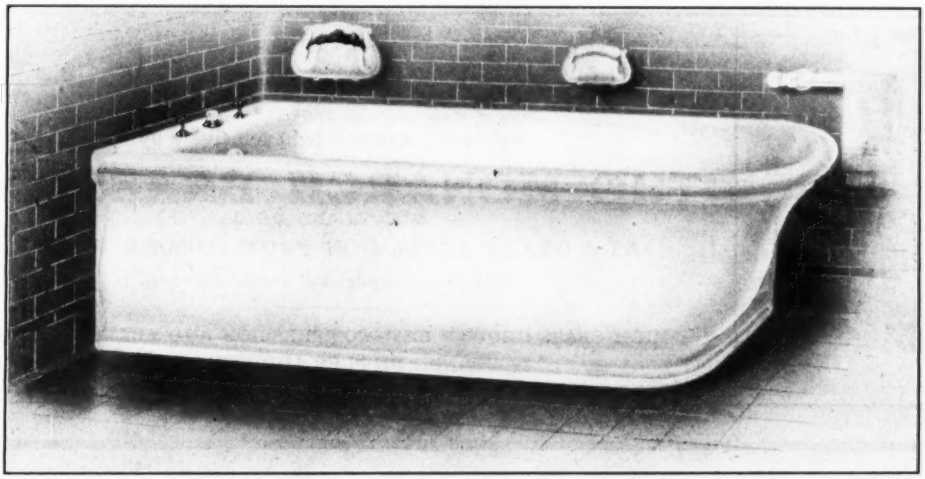
164-170
South Clinton Street Chicago

Telephones: Main 4757
4777

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

The Trenton Potteries Company

New Style "Seville" Bathtub—"Ideal" Solid Porcelain Ware



This Bathtub is of the French Style with one rounded end and the other end and back tiled into wall. The fittings are fastened in the tub as shown.

The Trenton Potteries Company

Trenton, New Jersey, U. S. A.

BARRETT SPECIALTIES

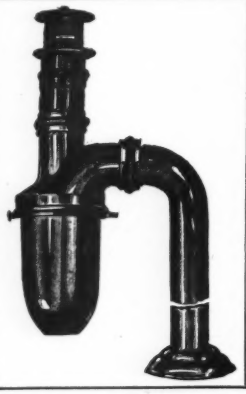
TIDEWATER AND SEWER TRAPS, O. D. BACK WATER VALVES, CLEANOUTS, GREASE TRAPS BARRETT SPECIAL FITTINGS. BRASS RAILING, IN ANY FINISH

JAMES BARRETT MFG. CO.

Manufacturers and Wholesale Dealers in Plumbers' Supplies

48-50 Pearl St. **BOSTON** 209-11 Franklin St.

Sewer and Tide Trap.



BOWER TRAPS

IMPROVED

are now manufactured exclusively by

THE MONARCH BRASS CO.

CLEVELAND, OHIO

AT A GREAT REDUCTION FROM FORMER PRICES

Send for catalogue and revised discounts.

HIGH CLASS GROUND KEY—COMPRESSION AND FULLER WORK
SOLDER NIPPLES AND UNIONS

J. B. CAMPBELL BRASS WORKS,

Erie, Pa.

Compression Sill Cocks WITH WHEEL OR KEY

Also Straight Pattern Sill Cocks,
Compression Bibbs, Stops, etc.

Write for catalogue
showing full line of Compression Work and other Plumbers' Goods.

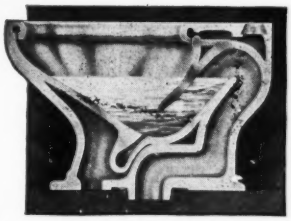
MAIN OFFICE AND FACTORY KENOSHA

THE FROST MFG. CO.

PLUMBERS BRASS GOODS.

EASTERN OFFICE NEW YORK

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.



The plumber who handles the SY-CLO Closet finds the possibility of a sale in nearly every repair job. The advantages of the SY-CLO over the ordinary closet are so many, and so apparent, that sales are easily made, not only to those who are admittedly in the market for a closet, but also to those who are dissatisfied with the old style, imperfect closet they may already have.

Take for instance the man with an old style washout closet—imperfect at best—continually offensive because of the foulness of the bowl. That man is a probable buyer of the SY-CLO as soon as he understands the wonderful principle of its syphonic action; that the bowl is instantly and completely emptied; that it is invariably self-cleaning.

The great width of water surface in the SY-CLO Closet is another argument; the unusual depth of water-seal and its prevention of the escape of sewer gas; the formation of SY-CLO in a single piece of solid white china that cannot absorb impurity—all are unanswerable selling arguments.

The word SY-CLO stamped on a closet signifies that it is constructed of the best material, with the aid of the best engineering skill, under the direction of the Potteries Selling Company, and that it has the endorsement of the following manufacturers, who have agreed that "SY-CLO" shall represent the highest standard of closet construction:

How to Make Sales With The SY-CLO

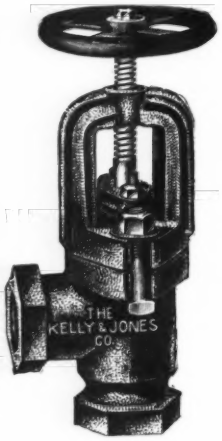
TRADE MARK

The Acme Sanitary Pottery Co., The Bellmark Pottery Co., The Brian Pottery Co., Fidelity Pottery Co., Keystone Pottery Co., Thos. Maddock's Sons Co., Jno. Maddock & Sons, The Sanitary Earth. Specialty Co., The Trenton Potteries Co., The Willets Manufacturing Co., Trenton, N. J.; Camden Pottery Co., Camden, N. J.; The Great Western Pottery Co., Kokomo, Ind., and Tiffin, O.; The Standard Sanitary Pottery Co., Elizabeth, N. J.; Universal Sanitary Manufacturing Co., New Castle, Pa.; The Wheeling Potteries Co., Riverside Department, Wheeling, W. Va.; The National Pottery Co., Evansvile, Ind.; The Columbia Pottery and Manufacturing Co., Kokomo, Ind.; American Sanitary Works, New York.

Sy-Clo Closets are made in all sizes and to suit every conceivable plan. For full particulars and descriptive literature, address

POTTERIES SELLING CO., Trenton. N. J.

IRON BODY BLOW-OFF VALVES



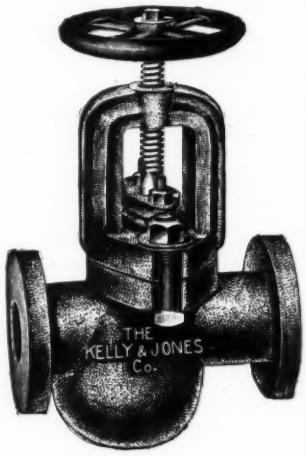
ANGLE and STRAIGHT PATTERN

Screwed and Flanged

Suitable for extreme high steam pressure up to 250 pounds

This Valve is constructed to meet the requirements of the progress made in feeding and operating steam boilers. It can be opened and closed as often as may be required without danger of choking or clogging, and by reason of its construction will, under all conditions, seat itself true and tight.

The best recommendation as to the efficiency of our Blow-off valve is its use by the representative high pressure plants in this country.



THE KELLY & JONES CO.

WORKS--GREENSBURG, PA.

NEW YORK CHICAGO PITTSBURG ST. LOUIS SAN FRANCISCO DENVER

JOHN C. KING & COMPANY

"THE ROOKERY" CHICAGO

Members: NEW YORK STOCK EXCHANGE
CHICAGO STOCK EXCHANGE
CHICAGO BOARD OF TRADE

Make a Specialty of Unlisted Securities.

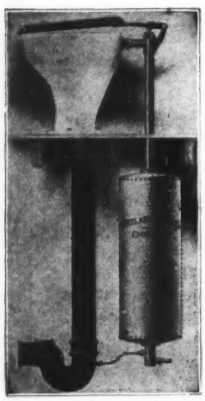
NEW YORK OFFICE
7 WALL STREET

Dean's System of Green House Heating

By Steam or Hot Water

With formulas for obtaining different temperatures. Tables giving radiation necessary per square foot of glass, tables giving glass surface, size of flow and return pipes and much other useful information. Price $2.00 prepaid.

Domestic Engineering, 58-64 N. Jefferson St., Chicago, Ill.



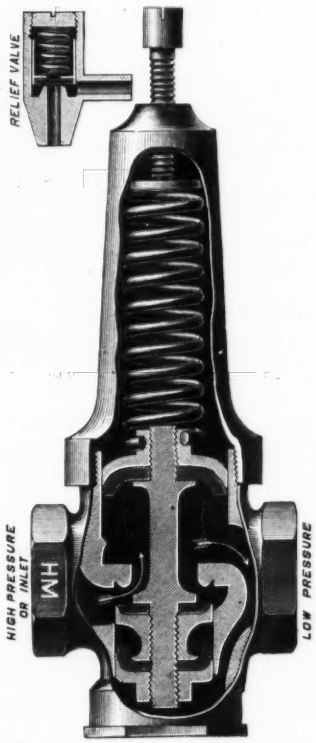
Kelly Frost Proof Closets
Kelly Juvenile School Closets
Kelly Automatic Closets for general use

The tanks are scoured in each operation of the fixtures and are as cleanly as the street main the water is delivered in, unlike a filthy box tank, and without its complicated machinery.
Send for catalogue.

THOS. KELLY & BRO.
Congress St. and 44th Ave.
CHICAGO

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

Mueller
Water Pressure Regulators



These regulators are made for service use up to 3 inch. Their few working parts being enclosed in a cap are safe against accident from the outside, and being made of brass are not hindered in their movement or weakened by corrosion.

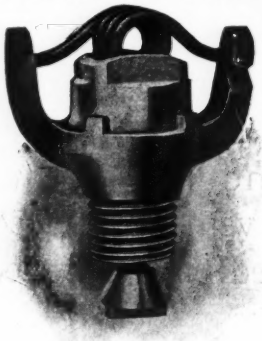
THE MARK OF DECATUR HOM ILL. U.S.A. MUELLER GOODS
UNCONDITIONAL GUARANTEE

H. MUELLER MFG. CO.

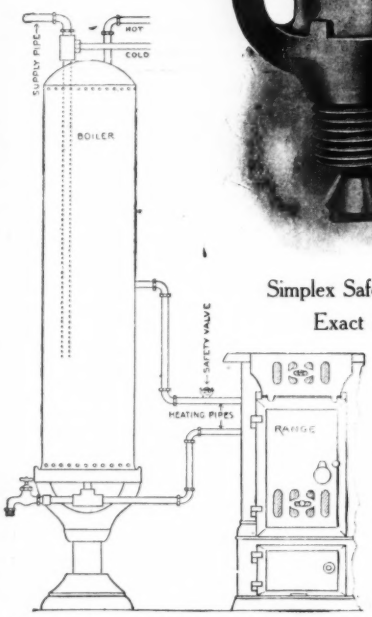
Works and General Offices
DECATUR, ILL., U. S. A.
West Cerro Gordo St.

Eastern Division
NEW YORK, N. Y., U. S. A.
254 Canal St., Cor. Lafayette

Striking illustration, printed in three colors, mounted on heavy board and arranged with easel back for counter display, furnished free with one dozen safety-valves.



Simplex Safety-Valve
Exact size.



Plumbers wanted everywhere to act as our agents.

Kitchen range and hot water system, showing place to attach valve.

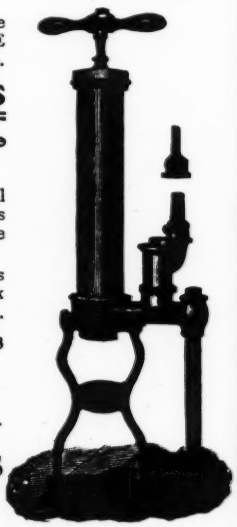
Write us today for booklet

THE SIMPLEX MFG. CO.

140 Nassau St., : : : : . New York, N. Y.
185 Dearborn St., Chicago, Ill. 79 Milk St., Boston, Mass.

Intelligent Economy

forbids the purchase of three pumps when you can get ONE that will do the work of three.



THE PERKES

Combination Air Force and Test Pump

can be used for testing soil pipe, proving gas pipe, and is the best force pump on the market.

No stuffing boxes; all valves are on the outside, and work equally well with air or water.

Patented March 15th, 1898
Patented June 18th, 1901

Send for Complete, Descriptive Circular.

Charles Perkes

Manufacturer and dealer in Plumbing Supplies.

ESTABLISHED 1856.

627-629 Arch Street, Philadelphia.

Patented

"Quinn" Syphon Action Flush Valve. None like it, works quick, and stronger than a high tank, no noise, no overflowing of tank, can't get out of order. Address

QUINN SUPPLY COMPANY
(Patentee and sole manufacturer)
120-122 S. Western Ave., : : : : : CHICAGO

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

"Cock of the Walk"

IT HAS A WHOLE LOT TO CROW ABOUT

Patent Pending

It has sent the whole brood of inferior roosters helter skelter, and cleaned up the barn yard, and served notice that only thoroughbreds will be allowed around the roost in the future. It has demonstrated Darwin's theory of the survival of the fittest. Many Plumbing Inspectors and Plumbers' Examining Boards are serving notice, that in the future only

Anti-Syphon Traps

that are free from secret partitions, and have scouring action, and demonstrated resealing properties, will be allowed. Has your Inspector or Examining Board served such notice? If not get up a petition in boots and demand that they wake up, and show that they are competent to do what they are paid for doing, viz:

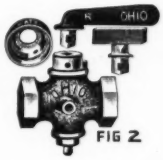
Safeguard the Public Health

NOW IS THE TIME

It is also the time for you to take all the defective traps that have been accumulating in your stock, and sell them for scrap brass, for you will probably never have an opportunity to get such a good price for it, as you can at the present time. Rid yourself of dead stock, and stock up with

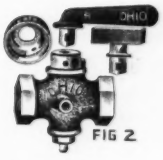
Radcliffe's "Positive" Anti-Syphon Trap

MANUFACTURED BY



The Ohio Brass & Iron Mfg. Co.

CLEVELAND, OHIO



MAKERS OF THE WELL KNOWN RELIABLE OHIO STOP AND WASTE COCKS

NO SLIPS

For 20 Years

NO SLIPPING BELTS

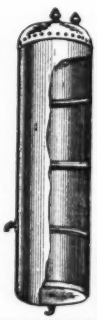
USE

Anti-Slip Belt Grease

Preserves your belts, saves loss of power. Makes slack belts take hold. Get catalogue and blotters.

GEO. CALLAHAN & CO.

129 Front Street, New York Factory: 218 Front Street



Boston Copper Range

BOILERS

ARE THE BEST MADE

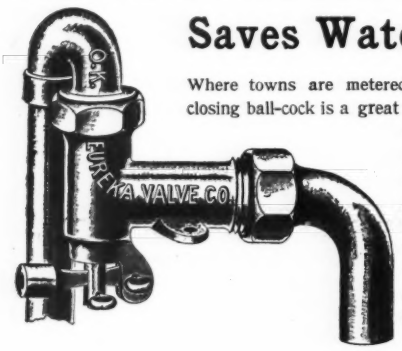
We make Copper Boilers for both tank and direct pressure.

We make four grades of tank pressure boilers, thus enabling you to have any quality desired. We make pressure boilers to stand any required pressure up to 400 pounds. We guarantee all our boilers, and being the largest manufacturer of copper boilers in New England **can fill orders promptly for any size.**

Dahlquist Mfg. Co.

40 W. Third St., South Boston, Mass.

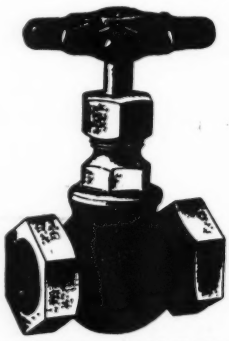
Established 1899. Telephone 546 So. Boston.



Saves Water Bills

Where towns are metered this O. K. self closing ball-cock is a great economizer. All waste is checked and bills greatly reduced. A few words to a customer on this feature should sell this ball-cock easily.

Eureka Valve Co.
19 High St.
BOSTON



USE

K. & M. Valves

High Grade Workmanship. Packed Stems.

Genuine Steam Metal Thoroughly Tested.

Sold from Standard Lists.

Kinsey & Mahler Co.
PEORIA, ILL.

PIPE STRAPS

Single; double; brass; n. p.; rubber bumpers.

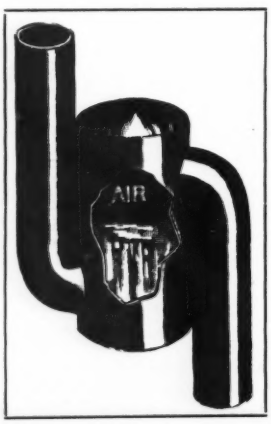
Send for catalogue of plumbing specialties

THE SMITH & EGGE MFG. CO.
Bridgeport, Conn.

Indispensable to Plumbers

The Sisson Insertable Soil Pipe Joints. Ask your Jobber for our booklet or write us if he is out of them.

R. ESTABROOK'S SONS
1st and C Streets, South Boston, Mass.



We Are Offering You

FIVE DOLLAR GOLD PIECES FOR FIFTY CENTS, IF YOU ONLY KNEW IT

Use CLEAN SWEEP TRAPS and watch results. They are the all-wool and a yard wide kind of Sanitary Traps. And our Fuller Work, what we know we can tell you. They are the best goods made. High class in all respects, and it is good judgment on your part to demand them from your jobbers. : : : : : : : :

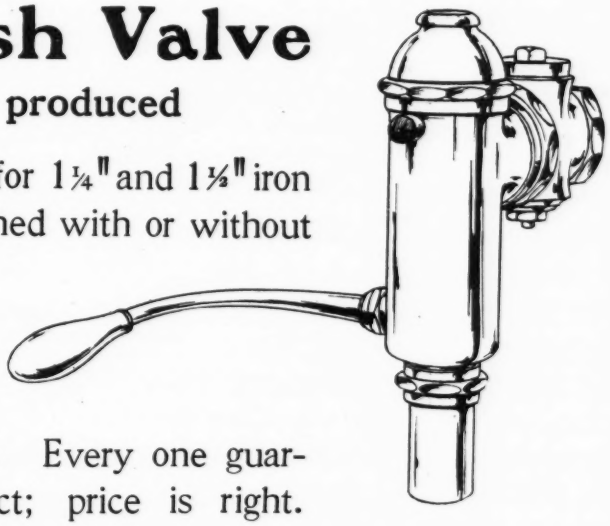
Detroit Sanitary Supply Company

SOLE MANUFACTURERS

27-29 Jefferson Avenue, Detroit, Michigan

Novio Flush Valve

The Best yet produced



Closet flush valve made for 1¼" and 1½" iron pipe connections. Furnished with or without controlling cock. Easily adjusted for high or low pressure, and for volume of water required. Made for fresh and salt water. Every one guaranteed; quality is correct; price is right.

JENKINS MANUFACTURING COMPANY

SOLE MANUFACTURERS

FACTORY AND GENERAL OFFICES.
BLOOMFIELD, N. J.

SALES OFFICE
13-21 PARK ROW, NEW YORK CITY

PROTECTOR

The "PROTECTOR" Non-Syphoning Trap is the best of its type. It is highly recommended by sanitary engineers, being so constructed as to effectually prevent the passage of any air or gas from the waste pipe into the building.

There is no need of a vent pipe. Back venting hastens evaporation and oscillation.

A 1½-inch Trap with a 2-inch seal of water, when vented, evaporates in 14 days. An unvented Trap takes 60 days to evaporate, with the same seal.

The water in the "PROTECTOR" Trap is driven through the body by hydraulic and atmospheric pressure, instead of being pulled through by suction.

ADVANTAGES.

It is self-cleaning.

It has a 3½-inch Seal of Water, which is retained at all times.

Fig. L-2820

Fig. L-2821

MANUFACTURED BY

Nos. 227-237 Washington St.

FEDERAL COMPANY

CHICAGO ILLINOIS

Thomas Maddock's Sons Co., Trenton, N.J.

VITREOUS

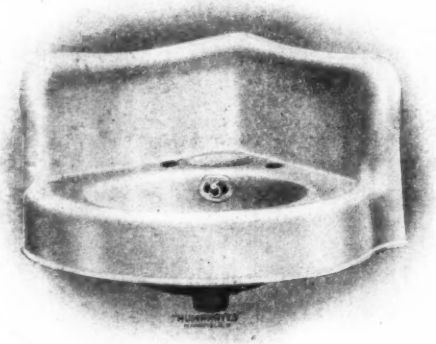
LAVATORIES

PLATE No. 11

18 x 20 inches, with 6 inch back, also made round front.

WRITE FOR CATALOGUE AND PRICES ON VITREOUS LAVATORIES.

"The Standard of the World"



The **"INCA"—Plate M 515**

Smooth Castings—Faultless Enamel. "Quality Ware for Quality Trade."

Guaranteed Strictly FIRST QUALITY

Enameled all over, without supplies . . $12.75
Enameled inside only, without supplies . . $10.75

The Humphryes Mfg. Co., Mansfield, O.

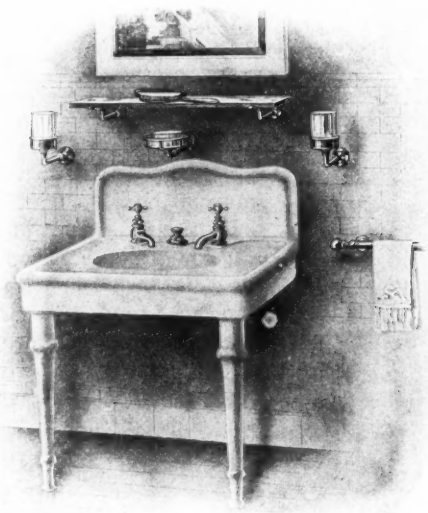


Plate 6-A

SESCO VITREOUS CHINA SQUARE LAVATORY

On Vitreous China Legs. **For Prices and styles write**

THE SANITARY EARTHENWARE SPECIALTY CO.,
Trenton, N. J.

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

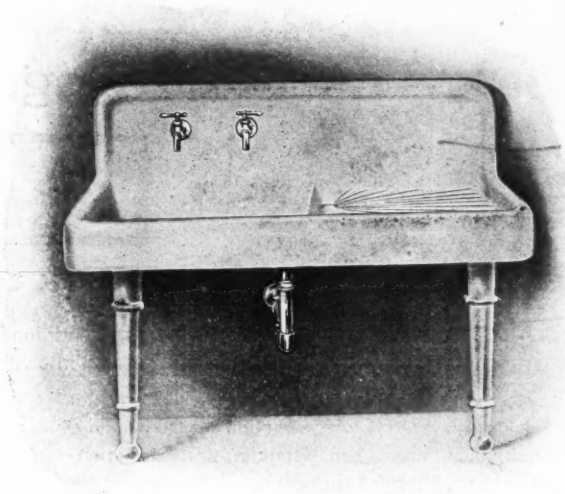


PLATE C-92 "TENNESSEE" SINK
(Patent applied for)

"THE CRY IS,

Still They Come"

That means new designs from The Cahill people. We show for the first time our new "Tennessee" sink, size 20x30 in., back 12 in., apron 5 in., drain board 20x24 in., all cast in one piece. Drain board depressed 2½ in., length over all 52 in. Supported by wall hangers and enameled legs.

WRITE FOR CUTS, PRICE LIST AND FULL DESCRIPTION

THE CAHILL IRON WORKS
CHATTANOOGA, TENN.

Kohler's Superior

Porcelain Enameled Iron "Colonial" Pattern Lavatory.

Slab, Basin and Apron Cast in "One Piece"

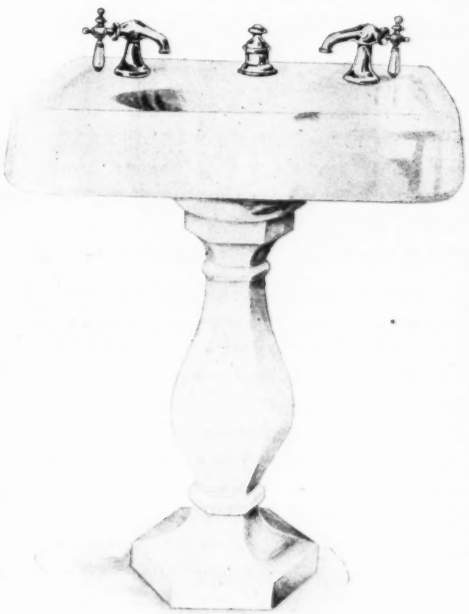
All over enameled on Square Pedestal and fitted with N. P. Brass "Superior" Fuller Faucets with "H. & C." Handles, Secret Waste with China Index, "Bottle" Trap with Vent to Wall and Straight Supply Pipes to Wall.

DIMENSIONS

Square Slab.....20x24"
Oval Basin.....12x15"
Plate K 141 P List complete as described.....$41.50

J. M. KOHLER SONS CO.
SHEBOYGAN, WISCONSIN

New York, 48 Cliff Street Chicago, 157 Lake Street
Oakland, 1127 Fifth Avenue



The "Colonial"

To Plumbers Who Have Had Trouble with Leaky Tank Linings

Order Remaco TANK LININGS FOR WATER CLOSETS **Now**

Remember! You Get a Five Year Guarantee

Concerning the product of this company it is no experiment. Years of use under severe conditions have demonstrated that REMACO Linings for water closet tanks are superior to any metal known.

Alkalies have no effect on them. They contain no pitch or coal tar. They cannot rust or corrode; will not dry or rot and are not injured by contraction or expansion. They are strong, flexible and indestructible; clean and easy to handle, and being non-conductors, do not produce galvanic action, therefor not affected by electricity. WE WILL BE PLEASED TO SEND YOU A SAMPLE OF REMACO FREE.

The Reynolds Manufacturing Co.

GRAND RAPIDS, MICH.

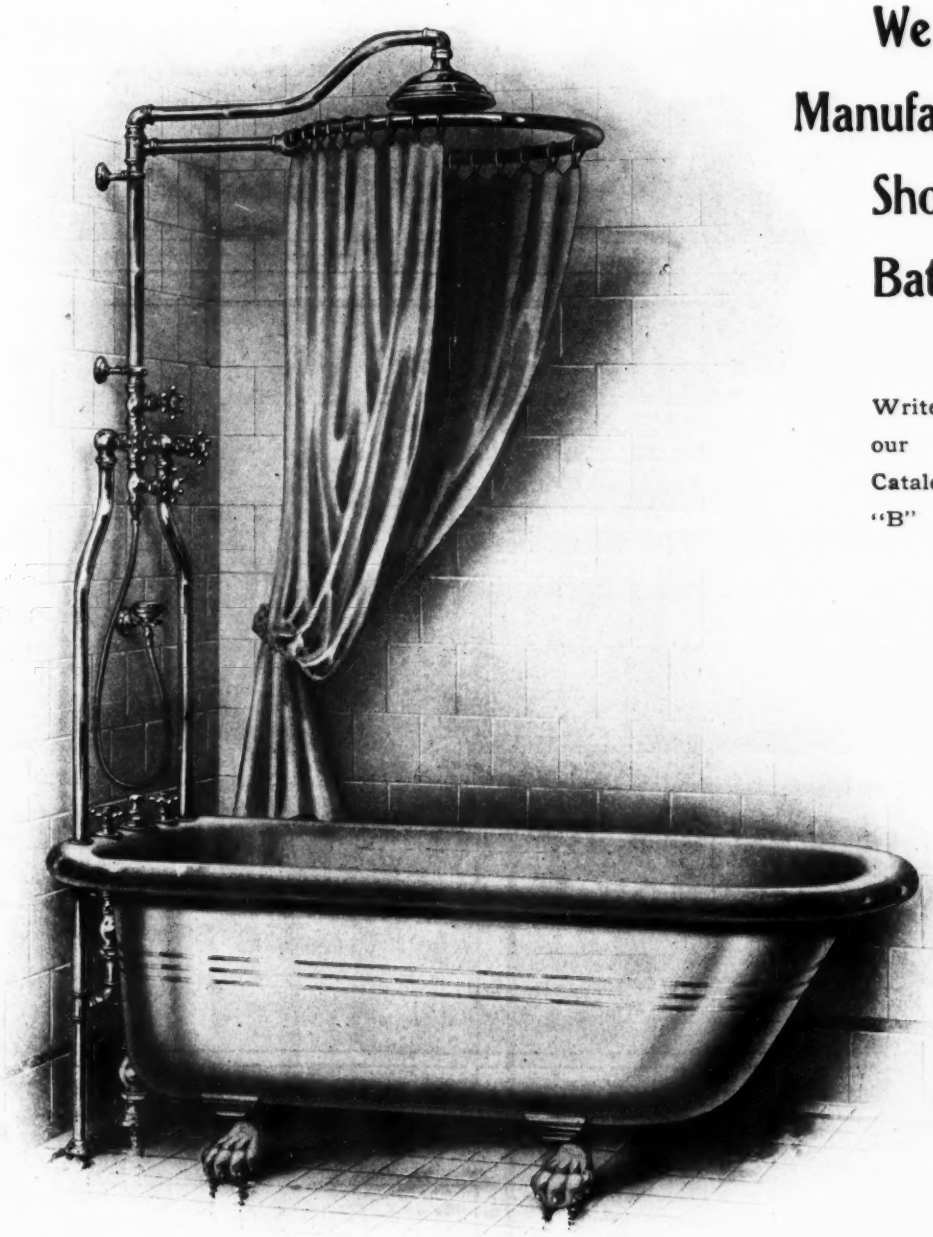
If Christopher Columbus Had Dropped Anchor

shortly after leaving Palos, where would YOU be today? If you are one of those who have not written us, YOU are an "ANCHOR-DROPPER". You have perhaps read our "Ad" and stopped there. If a prospective customer asks for an estimate and you do not send it in, will you get the job? It is the man who makes up his mind who goes ahead.

From all over the country, we have received inquiries and orders from concerns that have no use for anchors. If you, too, are an "ANTI-ANCHOR-DROPPER" send us your order for a EUREKA MOULD, price $4.00 F. O. B. Boston. If you wish a chart to sail by, send for some of our "Wet" reading. People in all other lines of business purchase tools and appliances which make for SYSTEM, and the plumber of to-day is rapidly falling into line. If there is anything which you do not understand we shall be pleased to write you regarding the matter.

Address THE EUREKA MOULD, Medford, Mass.

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.



We Manufacture Shower Baths

Write for our Catalog "B"

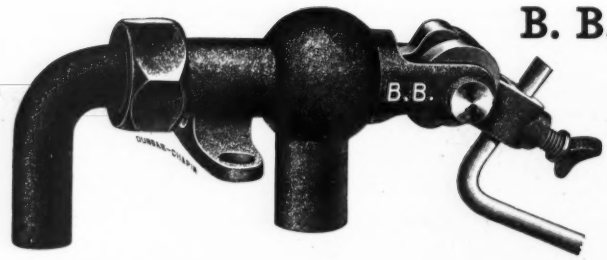
SHOWER BATH B 1122

ABSOLUTELY THE FINEST SHOWER BATH MADE

Nickel Plated Shower with Shampoo Attachment with Curtain Ring and Rubber Curtain, with Low Bell Supply Bath Fixture complete. All Valve Handles and Waste Top with China Index Centers (no tub), list.....$75.00
Above Fixtures made to fit 4¼ in. Roll Rim "Monarch" Enamel Iron Bath Tub. Tub with Fixtures fitted complete can be furnished, if desired. Price on Application. Diameter of Shower Head, 6½ inches. Diameter of Curtain Ring, 24 inches.

WRITE FOR DISCOUNTS

STREET & KENT MANUFACTURING COMPANY, 43-45 Fulton St., Chicago, Ill



B. B. High Pressure Ball Cock

SIMPLEST AND BEST EVER MADE

All sizes ½ inch to 3 inches inclusive for Top, Bottom or End Supply and also for Low Down Tanks with special float. Removable seat of best steam metal. We are making floats stamped with our B. B. which are thoroughly guaranteed.

ASK YOUR JOBBER FOR THEM.

BOSTON BRASS COMPANY
36-40 Oliver Street, Boston, Mass.

Vacuum Steam Heating

SOLE OWNERS MORGAN PATENTS

THE MARVELOUS FUEL SAVER WRITE AT ONCE FOR NEW CATALOGUES

CHICAGO MINNEAPOLIS **Kellogg-Mackay-Cameron Co.** KANSAS CITY SEATTLE

THE FROST MFG. CO.

PLUMBERS BRASS GOODS.

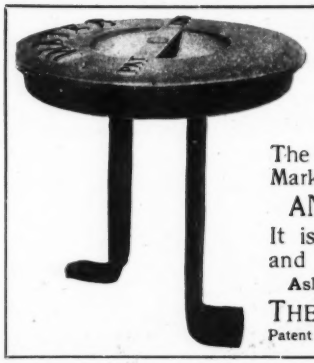
ELLIS SYSTEM OF SEWAGE REMOVAL

The G. V. Ellis System of Sewage Removal is adapted to Sewage Works for towns and cities where proper gravitation cannot be obtained, and The G. V. Ellis Sewer Lift Company is prepared to submit plans and specifications for this class of work.

Upon receipt of inquiry this company will furnish preliminary information for the installation of The G. V. Ellis System of Sewage Removal and follow this by a personal survey, and later submit plans and estimates.

Correspondence solicited

The G. V. Ellis Sewer Lift Co.
274 Ninth Avenue NEW YORK CITY



Something New

The only Cover on the Market that will repair ANY STOP BOX

It is adopted by Water and Gas Companies.

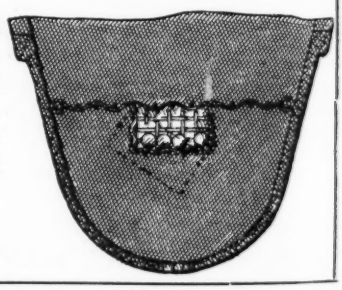
Ask your jobber or write

THE SNOW MFG. CO.
Patent 1905. DENVER, COLO.

State Rights or Patent for Sale

Hach Urinal Strainer

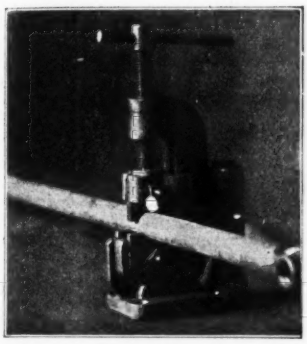
prevents stoppages of waste pipes. Made of wire. Has many advantages. Order through your dealer or C. O. D. Write for terms for state rights or patent.



R. G. Hach
159 E. 26th Street
NEW YORK

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

No Kit Complete Without It



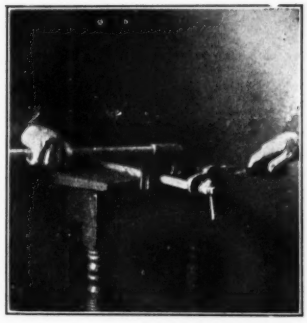
Stationary Position

MALLEABLE Iron Portable Vise, weight 5 lbs. Small in size but immense in capacity. Takes any size up to 1 inch. Once used you will not be without it.

Using Vise as a Wrench, threading Pipe

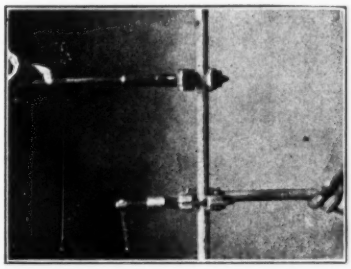
The Little Wonder Vise

PRICE $1.50



Using Vise as a Wrench, holding Pipe in Position

No need of carrying the old style cumbersome vise, the LITTLE WONDER will do all its work and more too. Can be used as a wrench with far greater adaptability.

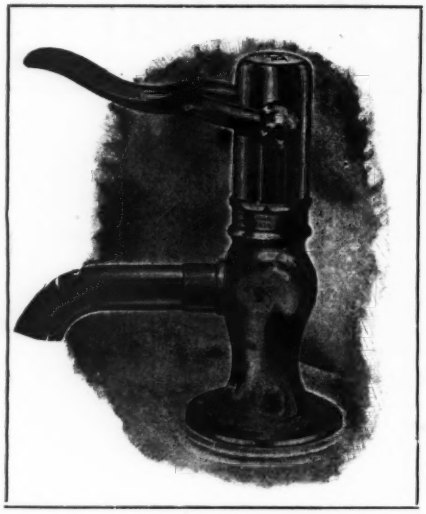


Using Vise as a Wrench, cutting Pipe in Position

FLECK BROS. CO.

Philadelphia **Pennsylvania**

The Broughton Self-Closing Basin Cocks have been in use for many years. Some of the largest Hotels and Public Buildings in the United States are equipped with these goods. Made in Brass, Nickel or Silver Plated, and in Solid Silver-Metal.

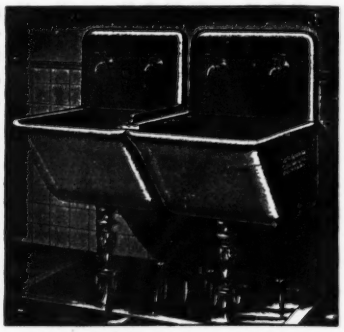


EVERY ONE WARRANTED

Manufactured Only by **E. STEBBINS MFG. CO.**

SPRINGFIELD, MASS. Works at Brightwood

Mr. High Grade Contractor
OF PLUMBING WORK



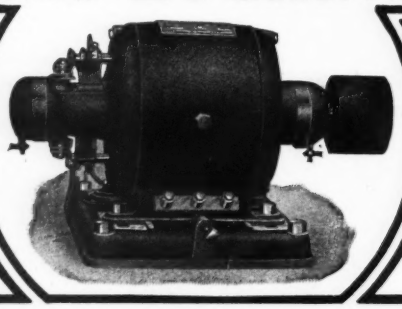
To you in particular we call attention to our solid porcelain, highly glazed Laundry Trays and Sinks. They are imperishable, save from extreme violence, beautiful in appearance, and above all, wholly sanitary. They meet with unerring approval from particular customers and therefore vitally enhance your own reputation for fine work.

Your request for our catalogue will be promptly acknowledged

Charles Graham Chemical Pottery Works

986-1018 Metropolitan Ave., Brooklyn, New York.

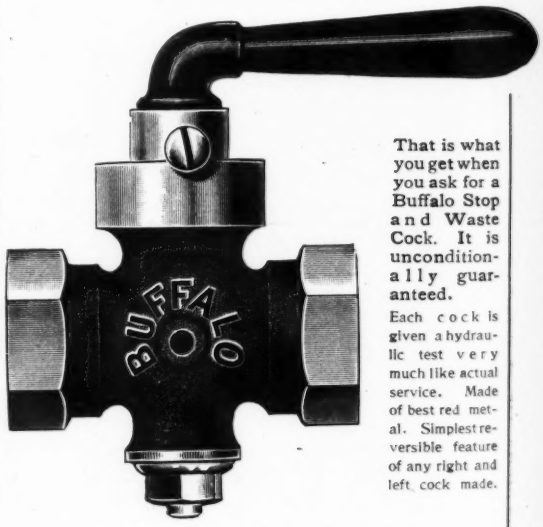
HALFTONE AND ZINC ETCHING



OF MECHANICAL SUBJECTS A SPECIALTY WE GUARANTEE THE BEST QUALITY OF WORK BUYABLE FOR THE LEAST MONEY SEND FOR ESTIMATES ON HIGH CLASS PROCESS ENGRAVING, STEEL DIE STAMPING & EMBOSSING

CLARK ENGRAVING & PRINTING CO.
MILWAUKEE, WISCONSIN.

Quality Unsurpassed



That is what you get when you ask for a Buffalo Stop and Waste Cock. It is unconditionally guaranteed.

Each cock is given a hydraulic test very much like actual service. Made of best red metal. Simplest reversible feature of any right and left cock made.

Write for samples and get prices.

FRIES & COMPANY

89-93 Main Street, ... Buffalo, N. Y.

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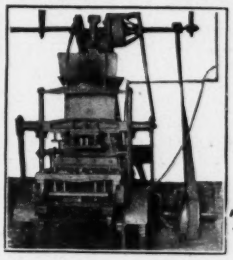
YOU will be sorry if you do not insist upon having a No. 31 Torch, as it is the best plain quart size torch ever made. The generator is powerful and is not affected by wind or cold. **Just the thing to have when that freeze-up comes.** The first day's use will save you its cost. Jobbers sell at factory price, or we will ship direct if cash accompanies the order. "Your money back if you are not pleased" is our guarantee.

CLAYTON & LAMBERT MFG. CO.
Detroit, Mich., U. S. A.

The "Berkshire"



A complete mold a minute. Absolutely automatic. You push the lever and the machine does all the rest.

Write us for circular and complete description.

The Berkshire Mfg. Co.
CLEVELAND, OHIO

C. N. HOOPER, Dubuque, Ia.

VITREOUS ENAMELING TECHNOLOGIST

Designs, builds and starts new plants. Improves quality and reduces the costs in those already established.

THE CELEBRATED

BELL WASHER

TAKE NOTICE! All washers manufactured by Andrew Bell will be stamped "The Bell" in future. Samples sent by mail. Made only by

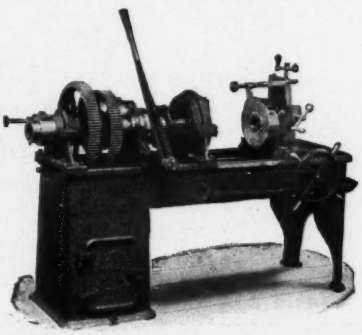
ANDREW BELL
375 Market St. NEWARK, N. J.

CHARLES MILLAR & SON CO., Selling Agents UTICA, N. Y.

"Utica Pipe is the Best."

Cast iron soil pipe. Cast iron water pipe. Plumbers' supplies and lead pipe.

QUICK PIPE THREADING



One forward movement of the lever grips the pipe, another backward releases, and both while the machine is running. Simple, isn't it? Circulars explain fully.

WRITE US TO-DAY

Bignall & Keeler Mfg. Co.
Edwardsville, : : : : : : : : : Ill.

"The Goods That Please"

Est. 1869 Inc. 1898

HAYS

Brass and Iron Fittings

for Plumbing, Water, Gas and Steam

Will Not Disappoint

Hays Mfg. Co.
12th and Liberty Sts. ERIE, PA.

Use the Best Molding Machines

E. H. MUMFORD CO.
17th & Callowhill Sts.
PHILADELPHIA, PA.

E. STEBBINS MFG. CO., Springfield, Mass.—All of our brass goods thoroughly tested

NOYES BRASS WORKS, Erie, Pa.—Brass and Bronze Castings for all Purposes

BUFFALO RADIATOR COMPANY

GENERAL OFFICE

Room 72, Erie County Bank Building
BUFFALO, N. Y.

NEW YORK CITY OFFICE, FLATIRON BLDG.
CHICAGO OFFICE, 37 DEARBORN AVE.

If you wish radiators which are mechanically perfect, that will not give you trouble before or after being installed, correspond with us.

BRASS CESSPOOLS THREADED

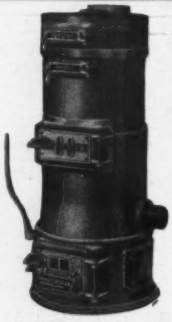
Male or female, also made for caulking having an extra long shank. Made in three sizes and of extra heavy material.
Write for booklet and sample.

Kokomo Brass Works
1-15 Scott St., Kokomo, Indiana

BEFORE

you place your orders for steam or hot water radiators, *get our prices.* We are making a very fine quality of goods and the conditions under which we work are such that we can quote very low prices.

The Reynolds Heater Co.
WARSAW, IND.
35 Dearborn Street, Chicago.

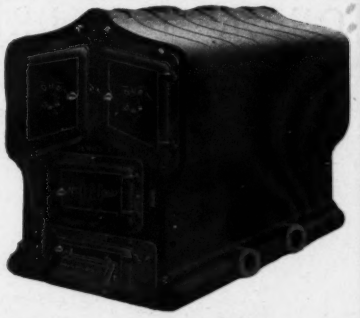


YOUR OWN NAME

On the Boiler You Install is Your Capital

We believe it a pleasant and mutually profitable custom of putting your own name on every heater you install. "Our Own" line is larger in styles and sizes than any other manufacturer can show. Write for our illustrated catalogue today.

NOVELTY IRON CO.,
CANTON, OHIO



The Mark Found Only On Good Goods

Many a good tank is spoiled by using a cheap rubber valve washer. Our syphon valve washers are dependable We make them in these sizes: 1 inch, 1¼, 1⅜, 1½, 1⅝ inch and 2 inch. If you buy rubber specialties from jobbers always specify "CANFIELD'S".

H. O. CANFIELD CO.,
Bridgeport, Conn.

The Sun Never Sets

where the
Brilliant Lamp Burns
and no other Light Half so Good or Cheap
It's Economy to Use Them—A Saving of
50 TO 75 PER CENT
Over Any Other Artificial Light, which is Demonstrated by the Many Thousands in Use for the Last Nine Years All Over the World. Write for D. E. Catalog, it tells all about them and our systems.

Brilliant Gas Lamp Co.
42 State Street, Chicago, Ill.

THE BRONZE POWDER WORKS CO.

Formerly CARL SCHLENK
NEW YORK

THE WORLD'S LEADING MANUFACTURERS OF
BRONZE POWDERS for Radiator and Steam Pipe Work
Write for samples
Factory: Elizabeth, N. J.

NOYES BRASS WORKS, Erie, Pa.—Brass and Bronze Castings for all Purposes